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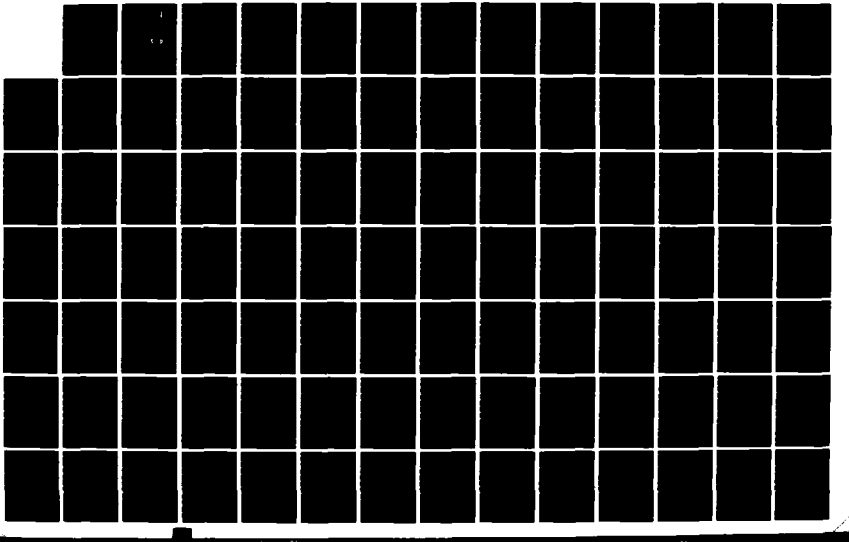

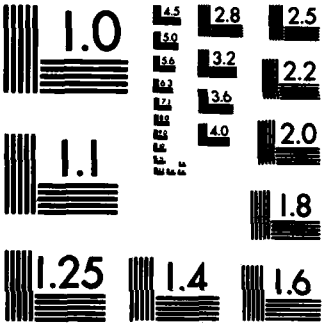

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ANALYSIS OF THE IMPACT OF "PEOPLE PROGRAMS" UPON RETENTION OF ENLISTED PERSONNEL IN THE AIR FORCE

Contract No. F41689-81-C-0063

Final Report

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June 9, 1982

Submitted to
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CHAPTER I

Introduction

Currently, a major concern of the U.S. Air Force is the relatively low reenlistment rates of experienced Air Force personnel. For example, the Air Force is faced with manpower shortages in AFSCs such as Weather Observers, Air Traffic Controllers, Missile Systems Analysts, and Avionic Communications Specialists. During the last two decades, the Air Force has instituted several "people programs" which are designed to encourage reenlistment of trained first term, second term, and career airmen. Basically, these programs allow experienced airmen to have some input in choosing the location or length of tour of their future assignments. In deciding to what extent these programs should be continued or expanded, one of several criteria upon which the Air Force must evaluate the effectiveness of the "people programs" is to determine the impact of "People Programs" on retention rates. Of particular concern are such programs as Base of Preference (BOP) assignments, Joint Assignment of Married Couples (Join Spouse), Voluntary Stabilized Base Assignment Program (VSBAP), and the CONUS Assignment SWAP Program, among others.

The primary purpose of this project is to provide an evaluation of the impact of the "people programs" on retention. In particular, we examine both theoretically and empirically the impact of assignment policy on the retention of first-termers, second-termers and career airman for the years 1974 to 1980. This time series analysis is undertaken at an individual level,

though some aggregate statistics are considered. At the individual level a probit specification will be used to carry out the analysis. This analysis will allow the Air Force to determine not only the impact of the "people programs" on reenlistment rates, but also if the cost of implementing these programs will be offset by the benefits which, to a large extent, consist of the savings in training costs of new personnel.

CHAPTER II

The Supply of Air Force Personnel

Essentially, the Air Force has at its disposal two means for attracting new recruits into the service and for increasing the number of active duty personnel who choose to reenlist. First, the Air Force can increase the monetary payoff of being in the service relative to that of being a civilian. This can be accomplished by increasing such things as basic pay and reenlistment bonuses or by providing occupational training at a cost which is lower than that which prevails in the civilian sector. Secondly, the Air Force can make military life more desirable by providing assignments which are consistent with the airman's preferences. This, of course, is one of the objectives of the "people programs."

In this chapter, the impact of each of these types of policy changes on an individual's decision to serve in the Air Force is investigated. Our results show that increases in the military wage relative to the civilian wage or the introduction of the "people programs" will increase the number of new recruits and their desired length of service.

Definitions

(a) G ≡ lifetime consumption

(b) N ≡ non-market (retirement) years

(c) M ≡ number of years in the military

(d) C ≡ number of years in a civilian occupation

(e) T ≡ expected length of life

(f) A ≡ initial wealth

(g) $m(t; \alpha)$ ≡ instantaneous military earnings which are a function of time, t, and a vector of exogenous parameters, α

(h) $c(t;M; \beta)$ ≡ instantaneous civilian earnings which are a function of time, t, years of military service, M, and a vector of exogenous parameters, β

(i) r ≡ the real rate of interest

(j) E_M ≡ $\int_0^M m(t;\alpha)e^{-rt}dt$ = lifetime military earnings

(k) E_C ≡ $\int_M^{T+N} c(t;M;\beta)e^{-rt}dt$ = lifetime civilian earnings

(l) U (•) ≡ lifetime utility

(m) γ ≡ a shift parameter indicating the quality of military life.

A Life-Cycle Model of Career Choice and the "People Programs"

The analysis of the impact of the Air Force's "people programs" on retention behavior begins by modeling the lifetime labor supply decision of a representative individual. In order

to focus attention on the enlistment and reenlistment decisions, one assumes that, at each instance in time, hours of work are fixed; that is, the one condition for employment in either the military or civilian sectors is assumed to be a fixed number of working hours per day (assuming a flexible number of hours worked does not change the results of the model while the assumption of a fixed number of hours simplifies the analysis). This being the case, the representative individual chooses lifetime consumption, the number of years of military service, and the number of years in a civilian occupation such that lifetime utility is maximized given his lifetime budget constraint and a constraint on the total time available to be spent either at work or in retirement. Formally, we have the following optimization problem evolves:

$$(1) \quad \underset{G,M,C}{\text{maximize}} \quad U = u(G) + V(M,\gamma) + W(C)$$

subject to

$$(2) \quad G = A + E_M + E_C$$

$$(3) \quad T = M + C + N$$

where increases in consumption, G, increase utility and increases in military years, M, or civilian years, C, decrease utility. This line of reasoning implicitly assumes that age at retirement, or number of years spent in retirement, is exogenously

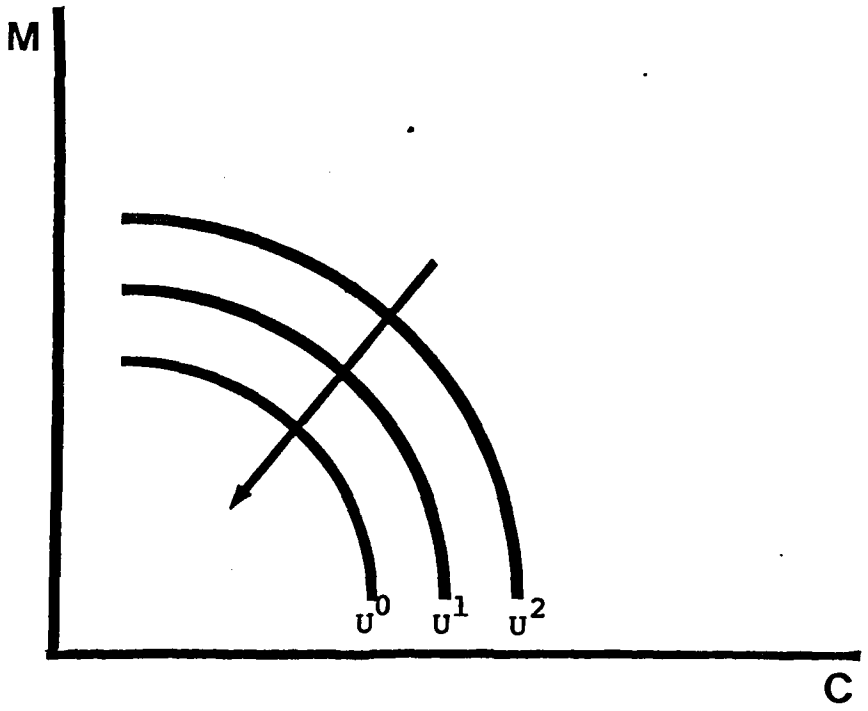
determined. This assumption, along with the assumption that utility is additively separable, is made for expositional ease. The analysis can be easily extended; however, the general results are cumbersome and add few additional insights.

At this point one should note two unique features of this model. First, military service is treated as an entry level occupation in that the airman has chosen the military as a means to develop skills which may be marketable in the civilian sector, and, thus, on average, does not initially intend to make the military a career. As noted in definition (h), this implies that the total number of years spent in the Air Force parametrically shifts the civilian age-earnings profile; thus, the skills acquired by Air Force personnel while in the service are in demand in the civilian sector. Of course, the skills developed are not specific to the AFSC the airman is assigned, since the civilian sector values work experience of many varieties, as well as the ability to assume responsibility.

Secondly, the essence of the Air Force's "people programs" is captured by the shift parameter γ. This is easily seen by referring to Figure 1. In this diagram the horizontal and vertical axes are years in a civilian occupation and years of military service respectively. The curves labeled U^0 through U^2 represent points of indifference between years in the military and years as a civilian for a given level of consumption. The curves nearer the origin correspond to curves of higher utility since we are assuming, essentially, that work is a "bad" over the relevant range. The slope of any one of these indifference

Figure 1

INDIFFERENCE CURVES



curves, at any particular point, represents the rate at which an individual would be willing to substitute military years for civilian years which, in turn, must be equivalent to the relative worth of a year of military service to a year of civilian service in terms of utility. Defining the marginal rate of substitution between years in the Air Force and years in a civilian job, $MRS_{M,C}$, as the absolute value of the slope of the indifference curve at a point, reduces to

$$(4) \quad MRS_{M,C} = W'(C)/V_M(M,\gamma)$$

where W' is the marginal utility of a civilian year and V_M the marginal utility of a military year. One objective of the Air Force's "people programs" is to make military life more desirable relative to civilian life; that is, to increase the marginal utility of years in the Air Force relative to years as a civilian. In terms of the shift parameter; γ, this means that an increase in γ increases V_M, $V_{M\gamma} > 0$, which, in turn, lowers the $MRS_{M,C}$. In other words, introducing the "people programs" makes the indifference curves in Figure 1 steeper since both W' and V_M are negative (diminishing marginal utility).

A formal derivation of the potential airman's utility maximizing optimum is obtained by substituting lifetime budget constraint (2) and time constraint (3) into (1) and then maximizing over M and C. The first order conditions (F.O.C.) for this optimization problem are (the second order conditions are assumed satisfied; thus the F.O.C. are necessary and sufficient

conditions for maximization):

$$(5) \quad (\partial U/\partial M) = u_g(\partial G/\partial M) + V_M \leq 0$$
$$(\partial U/\partial M) \cdot M = 0$$

$$(6) \quad (\partial U/\partial C) = u_G(\partial G/\partial C) + W_C \leq 0$$
$$(\partial U/\partial C) \cdot C = 0$$

where

$$(7) \quad (\partial G/\partial M) = m(M;\alpha)e^{-rM} + c(C+M;\ M,\beta)e^{-r(C+M)}$$
$$- c(M;\ M,\beta)e^{-rM} + \int_M^{C+M} c_2(t;\ M,\beta)e^{-rt}dt$$

$$(8) \quad (\partial G/\partial C) = c(C+M;\ M,\ \beta)e^{-r(C+M)},$$

$m(M;\alpha)$ is Air Force earnings at the end of the individual's military career, $c(C+M;\ M,\beta)$ and $c(M;\ M,\beta)$ are civilian earnings at retirement and at the end of the military career respectively, and

$$\int_M^{C+M} c_2 e^{-rt}dt$$

is the discounted sum of the increments in civilian earnings due

to an additional year of military service. Note that these earnings variables depend, in general, on initial earnings and the rate of growth of earnings which are captured by the shift parameters α and β.

Interpretation of these F.O.C. is immediate. Consider first an interior solution; that is, consider an individual who chooses to spend time both in the Air Force and as a civilian. In this case (5) and (6) hold with equality and

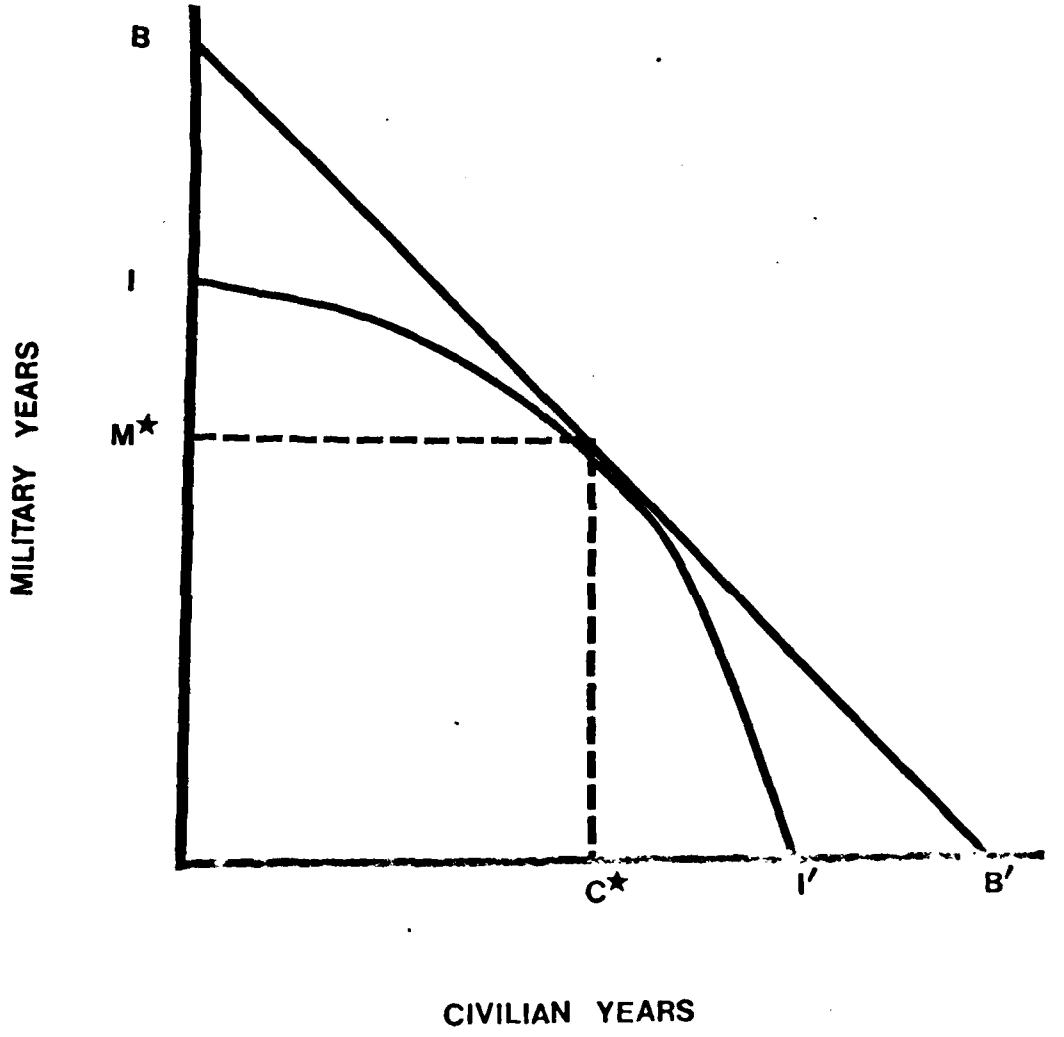
$$MRS_{M,C} = (\partial G/\partial C)/(\partial G/\partial M).$$

In other words, the representative individual chooses his length of stay in the Air Force such that the marginal rate of substitution between years of military service and years in a civilian occupation is just equal to the shadow price ratio. Note that the shadow price of staying an additional year in the Air Force is simply the amount of lifetime consumption that would be sacrificed had the individual not stayed another year in the Air Force while the shadow price of working an additional year as a civilian is the amount of lifetime consumption that would be sacrificed had the individual not worked this additional year.

The utility maximizing optimum can also be easily seen by using a simple graphical exposition as in Figure 2. In Figure 2, II' represents the individual's indifference curve for a given level of lifetime consumption. BB" is the lifetime budget constraint for a given level of lifetime consumption and is drawn

Figure 2

THE AIRMAN'S OPTIMUM LENGTH OF SERVICE



as a straight line which, essentially, is assuming that both military and civilian wages grow at constant rates and are equal to the real rate of interest in the steady state. In Figure 2, the airman chooses to spend M* years in the Air Force and C* years as a civilian. Notice that if lifetime budget constraint BB' had been very flat, the individual would have been a career airman, and if it had been very steep he would have opted for a civilian career. Thus, the model can handle all possible types of individuals.

For an interior solution, (5) and (6) yield the individual's demand for military and civilian life, in years, as functions of the parameters of the system. For expositional ease, both military and civilian earnings are assumed to grow at constant exponential rates. In particular,

$$(9) \quad m(t;\alpha) = m^{o}e^{\mu t} \Rightarrow (\dot{m}/m) = \mu$$

$$(10) \quad c(t; M,\beta) = \Psi(M)c^{o}e^{\nu t} \Rightarrow (\dot{c}/c) = \nu$$

where m^{o} and c^{o} are initial military and civilian earnings respectively and μ and ν are the rates of growth of these earnings. Given the age earnings profiles, lifetime earnings are given by

$$(11) \quad E_{m} = m^{o}e^{(\mu-r)M}/(\mu-r), \ \mu > r$$
$$= m^{o}M \ , \ \mu = r$$

$$(12) \quad E_c = \psi(M)c^o e^{(\nu-r)M/(\nu-r)}, \quad \nu > r$$
$$= \psi(M)c^o C \quad , \quad \nu = r$$

The optimum number of years of military service are given by

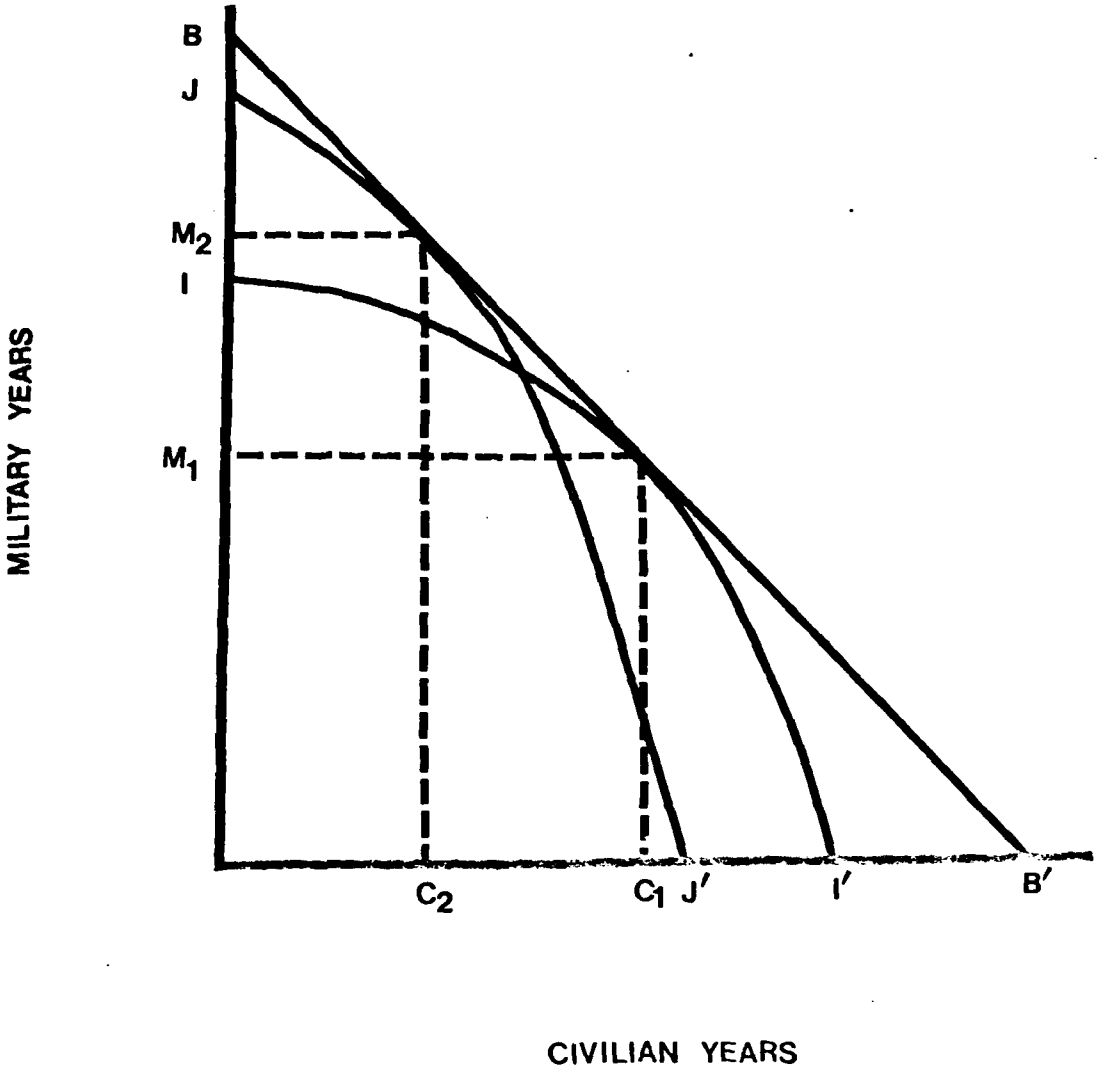
$$(13) \quad M = M(m, c, r, A, \gamma)$$

where m and c are vectors of parameters which describe the military and civilian age earnings profiles respectively. That is, the optimum number of years of military service depend on present and future military and civilian earnings, the real rate of interest, wealth, and any amenities associated with military life. As is shown in the Appendix A, increases in the military age-earnings profile, m, or the quality of military life, γ, increase the optimum number of years of military service; while increases in the civilian age-earnings profile, the real rate of interest, or wealth, decrease years of service.

Again, the results can be seen easily with the aid of a graph. In the graphical example, focus is on changes in the Air Force's assignment policy programs and their impact on the optimum years of military service. In Figure 3 the impact of implementing the "people programs" on length of service is illustrated. BB' again is the individual's budget constraint assuming wages grow at a rate equal to the real rate of interest. II' represents the individual's preference mapping before instituting the "people programs." Now, let the Air Force introduce programs which increase the individual's relative

Figure 3

THE EFFECT OF "PEOPLE PROGRAMS" ON THE AIRMAN'S OPTIMUM LENGTH OF SERVICE



preferences for military life, i.e., $V_{m\gamma} > 0$. Given that civilian work effort is a net "bad" this change in γ will steepen the preference map as is shown by JJ'. Thus, the new optimum requires a longer stay in the military and a shorter civilian career.

Equations (5) and (6) also yield the supply curve of entrants or enlistees into the Air Force. To see this define the individual's "reservation wage" for military service, m_r as the marginal rate of substitution between military and civilian years when no time is spent in the military. Thus, the individual will choose a civilian occupation for his entire life if the reservation wage is greater than the shadow price ratio, that is, if

$$m_r > (\partial G/\partial M)/(\partial G/\partial C)$$

Clearly, all the factors which influence M also influence the supply of entrants, S, and thus

$$(14) \quad S = S(m,c,r,A,\gamma)$$

where increases in m or γ increase the number of enlistees and increases in c, r or A decrease the number of enlistees.

CHAPTER III

Equilibrium in the Air Force Personnel Market

In this chapter the interaction between supply and demand in the market for Air Force personnel is examined. The analysis is divided into two sections. First, we determine the equilibrium flow of recruits and the mean length of stay for the force as a whole is determined, and then the impact of changes in parameters such as wages, average personnel quality, the quality of military life, and the force level, on these equilibrium values are examined. Secondly, the characteristics of individual job markets, or AFSCs, within the entire force are considered.

The Force

Assume that the Air Force is given an exogenously determined force level requirement, F, which is always met. Given this preminse, the overall demand for airmen is a demand that the force level be maintained. The flow of new recruits, accessions, required to maitain any particular inventory of personnel depends on the turnover rate per position, which is the inverse of the mean length of stay, and the size of the force; that is, flow equilibrium is attained when the supply of recruits of a given quality is equal to the average rate at which personnel leave the Air Force. Thus, the demand for accessions is directly related to the supply of continuations.

Market Equilibrium with no Induction Queue

First, the case is considered in which no induction inventory is maintained. From the discussion of the representative airmen's life-cycle model of career choice, one deduces that the supply of recruits, accessions, with a given stock of human capital or, in other words, of a given quality, varies directly with the military wage and the quality of military life and indirectly with the civilian wage. Aggregating across all potential recruits, the expected number of accessions is given by

$$(1) \quad S = S(\overset{+}{m},\overset{-}{c},\overset{+}{\gamma},\overset{-}{\theta})$$

where m and c are vectors of parameters describing the Air Force and civilian age-earnings profiles respectively, γ a shift parameter indicating the quality of Air Force life, and θ is the average quality of entrants. The average stock of human capital is assumed to vary inversely with the expected supply of new recruits.

The life-cycle model also yielded the optimum number of years the representative airmen will stay in the Air Force. Again, aggregating across all airmen, one generates a distribution of years of military service with the mean length of stay given by

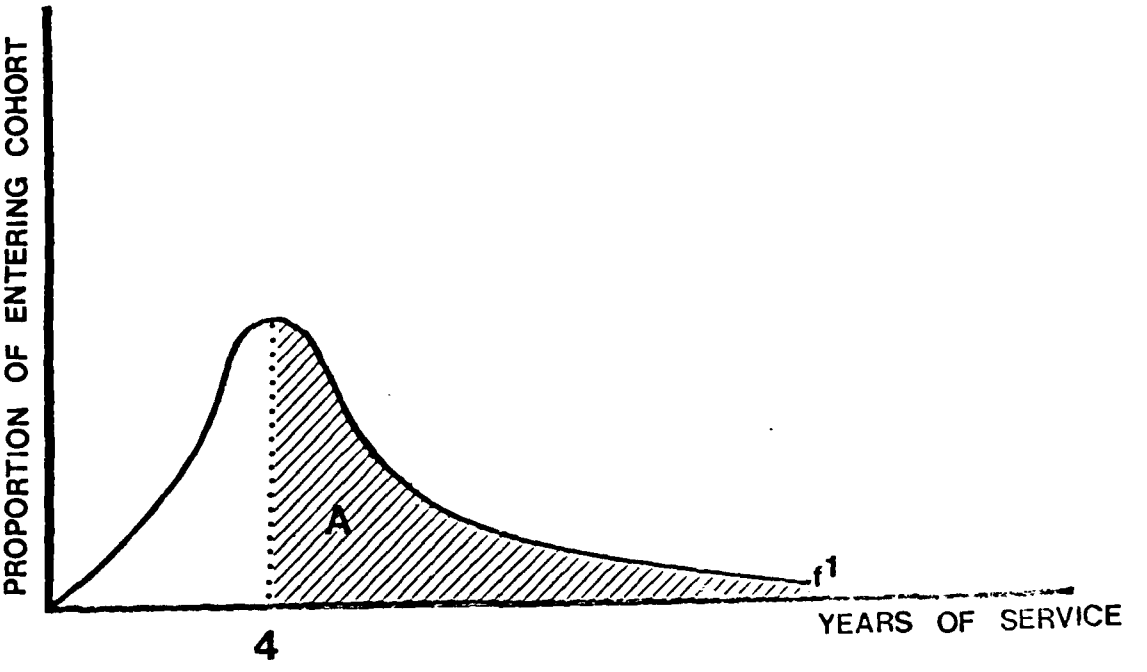
$$(2) \quad M = M(\overset{+}{m},\overset{-}{c},\overset{+}{\gamma},\overset{-}{\theta})$$

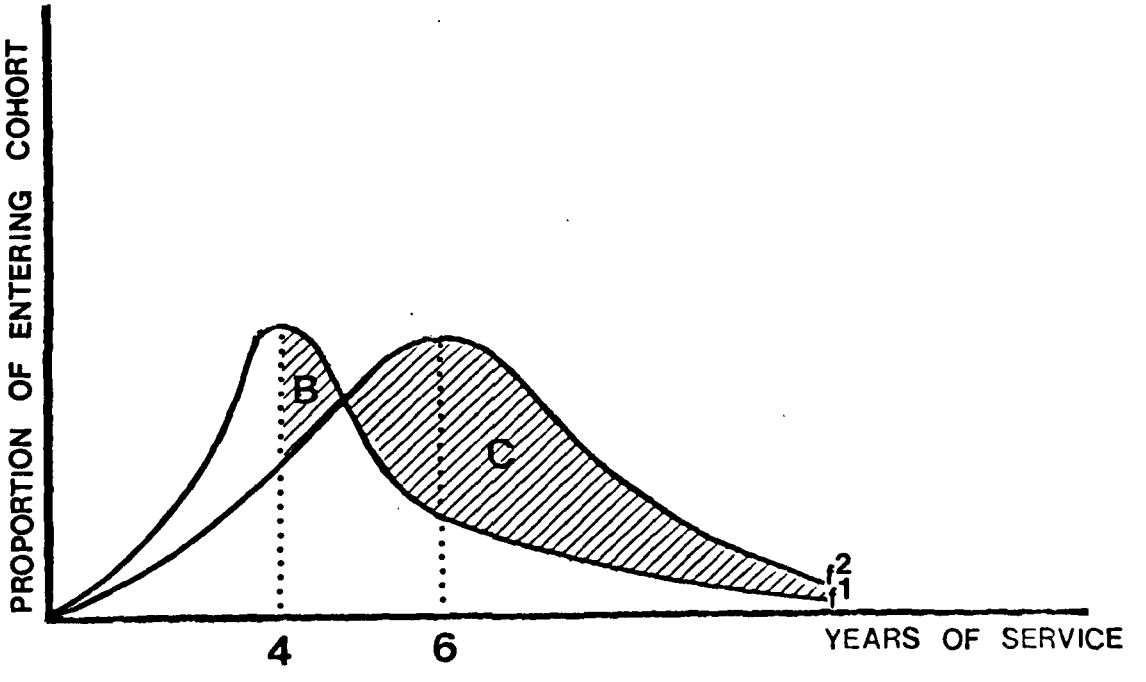
where, as above, the mean length of stay is assumed to fall as the average quality of the force rises. At this point one should note that a change in the mean length of stay arising from a change in some parameter is, qualitatively, the same as the change in the retention or reenlistment rate. For example, if the mean length of stay increases due to an increase in the military wage or the quality of military life, then the distribution of years of military service shifts to the right and, knowing this distribution, one can calculate the increase in reenlistments. This exercise is illustrated in Figure 4. In panel (a), f^1 represents the initial distribution of years of service with a mean length of stay equal to four years. The number of airmen staying more than four years is given by the shaded area A. In panel (b), this initial distribution is compared with one that has been shifted to the right, f^2, with a mean length of stay equal to 6 years. In this case, the number of airmen staying beyond the four year point is equal to the area under f^2 to the right of 4 years and the increase in reenlistments is simply the difference between areas B and C.

The Air Force's demand for new recruits depends on the force size and the number of airmen leaving the military in any given unit interval. Assuming that the number of men leaving the force can be represented by a stationary stochastic process, then the steady state expected number leaving, L, will equal the force size divided by the mean length of stay. Thus, the demand for new recruits is given by

Figure 4

CHANGES IN THE DISTRIBUTION OF YEARS OF MILITARY SERVICE





(3) $L = L(\bar{m}, \overset{+}{c}, \bar{\gamma}, \overset{+}{\theta}, \overset{+}{F}) \equiv F/M(m, c, \gamma, \theta)$.

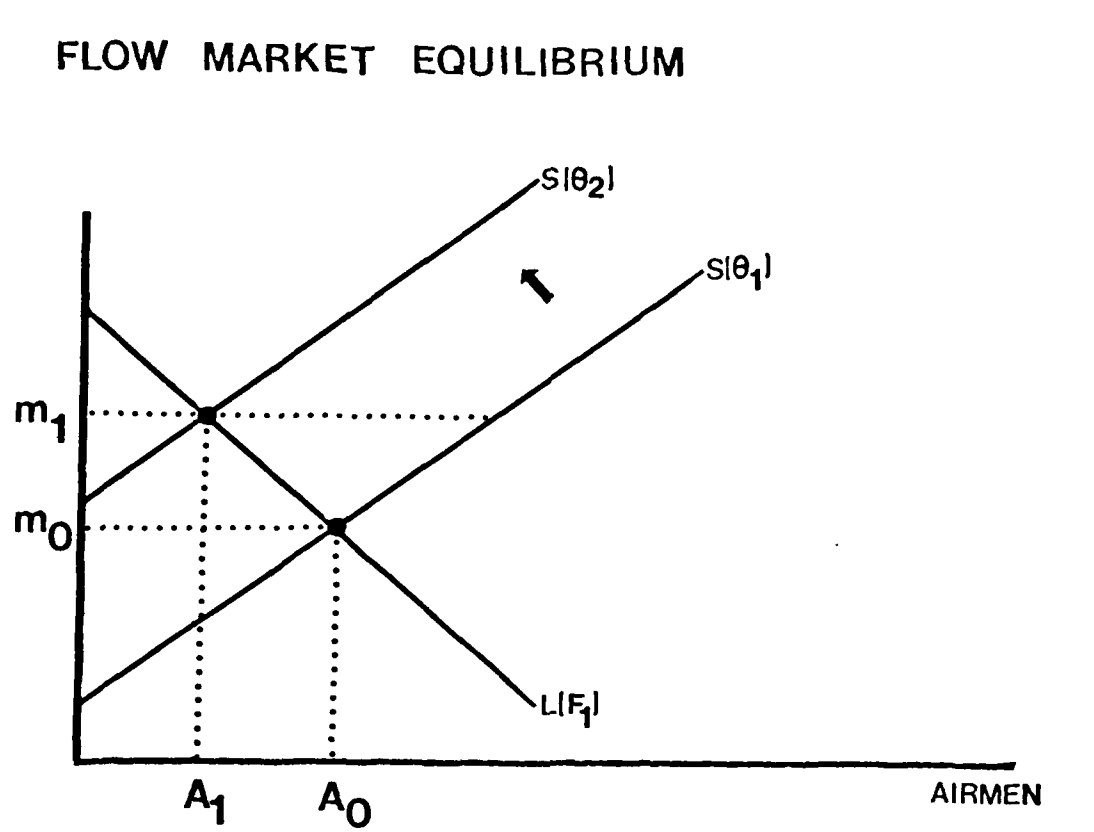
This result follows from the fact that in the steady state the distribution of personnel by desired length of service will be identical for every entering cohort. Thus, the probability that any given individual drawn randomly will leave the Air Force during the next interval will be (1/M). Equation (3) then reflects the fact that the expected number leaving the force in a unit interval is simply the probability of leaving times the number in the force.

With the force level fixed, equations (1) and (3) determine the equilibrium flow of recruits and losses; that is, in equilibrium the number of new recruits must be equal to the number of airmen leaving the force. Thus, the equilibrium condition is:

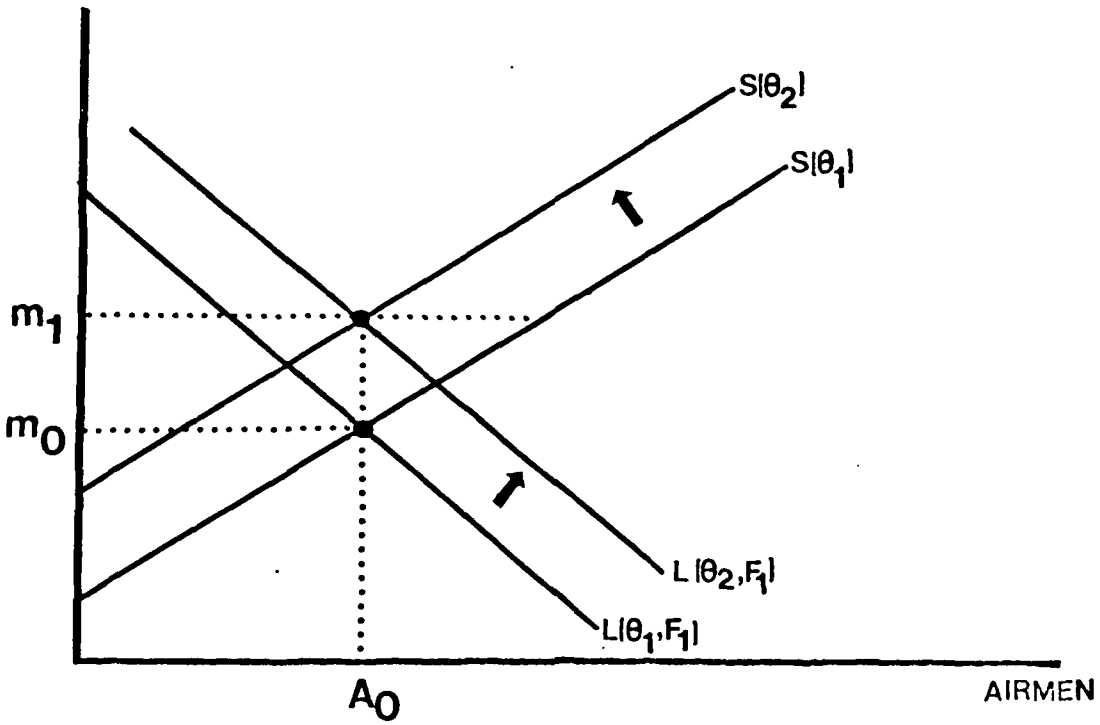
(4) $S = L$.

Throughout our analysis, the Air Force is assumed to take wages and the force level as fixed. This makes the Air Force a quality-taker in the sense that the mean quality adjusts to the level that supports equilibrium in the flow market. Quality can be measured in many ways, i.e., percent of non-high school graduates, percent of AFQT 1's or 2's, etc. This quality-taking behavior is illustrated in Figure 5 in conjunction with two differing sets of assumptions. In panel (a), the mean length of stay is assumed independent of quality which, in turn, implies that the demand for recruits is also independent of

Figure 5


FLOW MARKET EQUILIBRIUM
S[θ2]
S[θ1]
m1
m0
L[F1]
A1
A0
AIRMEN

(a)


S[θ2]
S[θ1]
m1
m0
L[θ2,F1]
L[θ1,F1]
A0
AIRMEN

(b)

quality. $L(F_1)$ represents the demand for recruits given a force level F_1, m_o is the military wage, and θ, is the average level of quality which equates supply, $S(\theta_1)$, to demand at that point where the flow of recruits, A_o, is just sufficient to maintain the force level at wage m_o. Now suppose, for some reason, the military wage is increased to M_1. In this quality-taking model, average quality increases which shifts the supply curve to the left to $S(\theta_2)$. The new equilibrium point requires fewer recruits per period, $A_1 < A_0$, a higher average quality of force personnel, $\theta_2 > \theta_1$, and a longer mean length of stay.

In panel (b) both the supply of recruits and the mean length of stay are allowed to depend on average quality. In this case, both the supply and demand curves will shift in responsse to a change in the military wage. The illustrated case is where the new equilibrium point requires the same number of recruits per period who are, on average, of a higher quality and stay the same number of years as before the wage change. In general, however, the results are ambiguous, depending upon the magnitude of the shifts of the supply of recruits, $S(\theta_2)$, and the demand for recruits, $L(\theta_1, F_1)$.

The graphical analysis can be formalized by considering equilibrium condition (4). For the fixed force, quality-taking model, equation (4) can be used to solve for that level of average personnel quality which guarantees the force will be maintained. Thus,

$$\theta^* = \theta(m, c, \gamma, F^*) \tag{5}$$

where θ^* is optimum average quality and F^* the force level requirement.

Now consider a change in the military wage. Differentiating equation (4) with respect to m gives

$$(6) \quad [(\partial S/\partial m) + (\partial S/\partial \theta)(\partial \theta/\partial m)] + (F/M^2)[(\partial M/\partial m) + (\partial M/\partial \theta)(\partial \theta/\partial m)] = 0$$

where $(\partial S/\partial m)$ is the slope of the quality constant supply curve, $(\partial S/\partial \theta)$ is the change in the flow of recruits due to the induced change in the average quality of recruits, $(\partial M/\partial m)$ is the quality constant change in the mean length of stay, and $(\partial M/\partial \theta)$ is the change in the mean length of stay arising from a change in quality. Equation (6), then, implies

$$(7) \quad \partial \theta/\partial m = - [(\partial S/\partial m) + (F/M^2)(\partial M/\partial m)]/[(\partial S/\partial \theta) + (F/M^2)(\partial M/\partial \theta)] > 0$$

That is, for a constant force level, an increase in the military wage always increases the average quality of the force. Furthermore, if the mean length of stay is independent of quality, $(\partial M/\partial \theta) = 0$, then the mean length of stay increases and, thus, the equilibrium number of recruits falls; that is, $[(\partial S/\partial m) + (\partial S/\partial \theta)(\partial \theta/\partial m)] = - (F/M^2)(\partial M/\partial m) < 0$. In general, however, the impact of the wage change on the flow of recruits and the mean length of stay is ambiguous.

Alternatively, if the average force quality is fixed and the force level adjusts to ensure equilibrium, equation (4) implies

$$(8) \quad F^* = F(m,c,\gamma,\theta^*).$$

Again, differentiating (4) with respect to m gives

$$(9) \quad (\partial S/\partial m) + (F/M^2)(\partial M/\partial m) - (1/M)(\partial F/\partial m) = 0$$

which implies that

$$(10) \quad (\partial F/\partial m) = M[(\partial S/\partial m) + (F/M^2)(\partial M/\partial m)] > 0.$$

Thus, holding quality constant, an increase in the military wage will increase the size of the force.

Assignment Policy: The People Programs

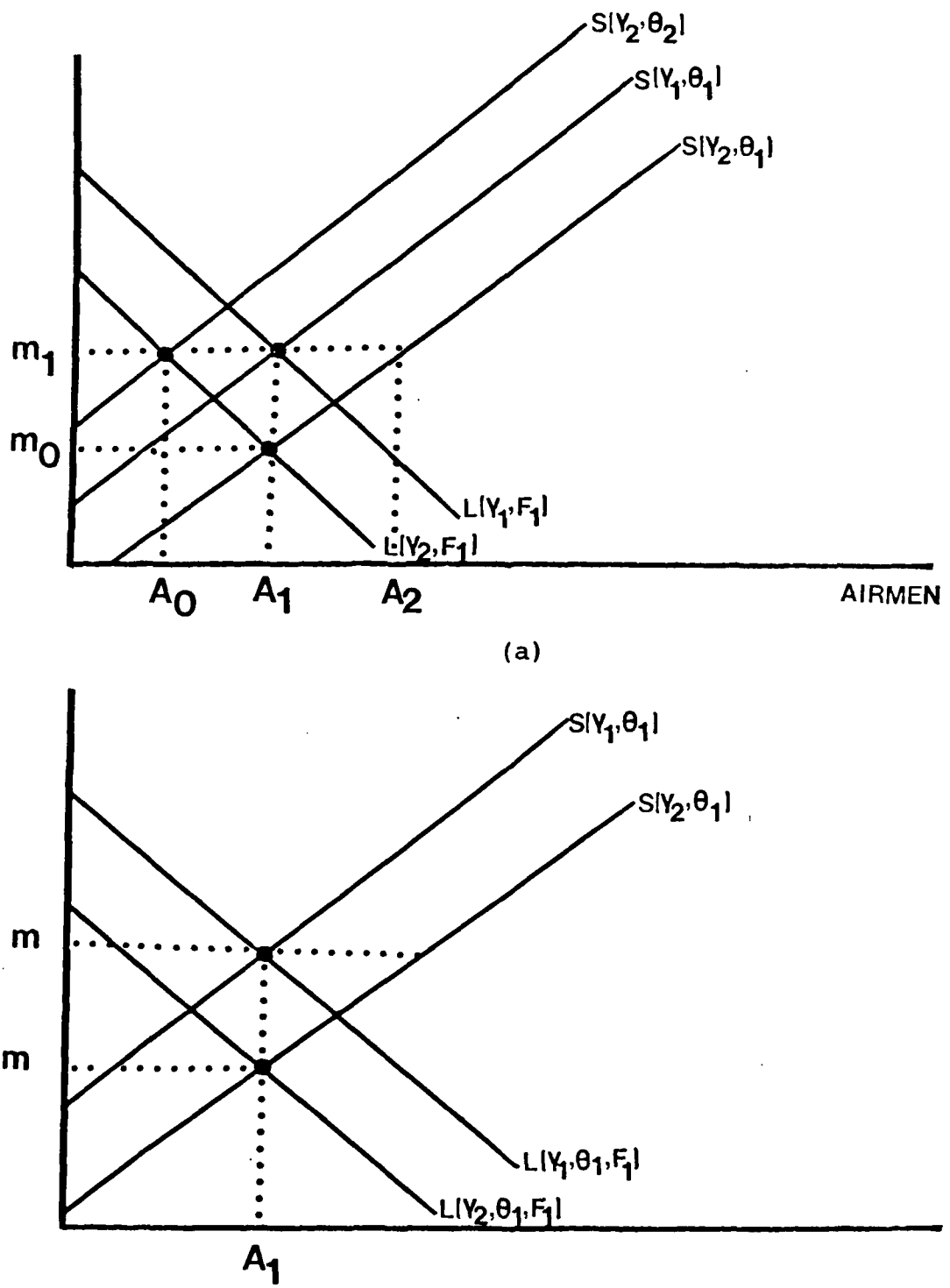
Using a similar line of reasoning one can ascertain the impact of the Air Force's "people programs" on the equilibrium military wage, average quality and the force level. Consider first the change in the wage due to an increase in the quality of military life; i.e., implementation of the "people programs". Differentiating equilibrium condition (4) with respect to γ, holding quality and the force level constant, gives

$$(11) \quad \frac{\partial m}{\partial \gamma} = \left[- \frac{\partial S}{\partial \gamma} - \left(\frac{F}{M^2}\right)\frac{\partial M}{\partial \gamma} \right] / \left[\frac{\partial S}{\partial m} + \left(\frac{F}{M^2}\right)\frac{\partial M}{\partial m}\right] < 0.$$

That is, an increase in the quality of military life must lead to a reduction in wages if average force quality and the force level are held constant. This result is illustrated in panel (a) of Figure 6. m_2 and A_1 are the equilibrium wage and flow of recruits respectively while $S(\gamma_1, \theta_1)$ and $L(\gamma_1, F_1)$ are the supply and demand curves when the quality of military life is represented by γ_1, average quality of Air Force personnel by θ_1 and the force level is F_1. Implementation of the "people programs" shifts the supply curve out to $S(\gamma_2, \theta_1)$ and the demand curve in to $L(\gamma_2, F_1)$ since the mean length of stay increases at every wage. Thus, the equilibrium wage falls to m_o while the flow of recruits needed to maintain force level F_1 does not change and, thus, the mean length of stay remains the same.

If, however, the Air Force takes the force level and wages as fixed, then quality must adjust to maintain equilibrium; in particular, quality will increase with an increase in the quality of military life. Again, consider Figure 6. In panel (a) the mean length of stay is assumed to be independent of quality. In this case, the "people programs" cause an excess supply of airmen at the fixed wage m_1; thus, the Air Force increases the average quality of its personnel which shifts supply curve $S(\gamma_2, \theta_1)$ left to supply curve $S(\gamma_2, \theta_2)$. This results in a force of higher average quality, fewer recruits per period, A_o, and a higher mean length of stay. If, on the other hand, both supply and mean length of stay is allowed to depend on quality, average quality rises but the impact on the flow of recruits and the mean length of stay is ambiguous. As indicated in panel (b), the

Figure 6


THE PEOPLE PROGRAMS
S[Y2,θ2]
S[Y1,θ1]
S[Y2,θ1]
m1
m0
L[Y1,F1]
L[Y2,F1]
A0
A1
A2
AIRMEN
(a)
S[Y1,θ1]
S[Y2,θ1]
m
m
L[Y1,θ1,F1]
L[Y2,θ1,F1]
A1
(b)

"people programs" may, in fact, generate no change in either of these variables, again, depending upon the magnitude of the changes.

The argument can be formalized by differentiating equation (4) with respect to γ holding the force level and wages constant. This gives

$$(12) \quad \frac{\partial \theta}{\partial \gamma} = \left[- \frac{\partial S}{\partial \gamma} - (F/M^2) \frac{\partial M}{\partial \gamma} \right] / \left[\frac{\partial S}{\partial \theta} + (F/M^2) \frac{\partial M}{\partial \theta} \right] > 0.$$

Similarly, differentiating (4) with respect to γ holding quality constant yields

$$(13) \quad \frac{\partial F}{\partial \gamma} = M\left(\frac{\partial S}{\partial \gamma} + \left(\frac{F}{M^2} \right) \frac{\partial M}{\partial \gamma} \right) > 0.$$

Thus, for a given average quality, the force level will increase with the institution of programs designed to enhance the quality of military life.

An Individual AFSC

In order to analyze a particular AFSC, the assumptions must be modified to a certain extent. The following assumptions are made:

(i) for each AFSC the Air Force has a manning requirement;

(ii) RMC is exogenous;

(iii) within an AFSC, airmen are homogenous with

respect to quality;

(iv) the Air Force pays a bonus wage which varies inversely with the percent of the manning requirement which is met.

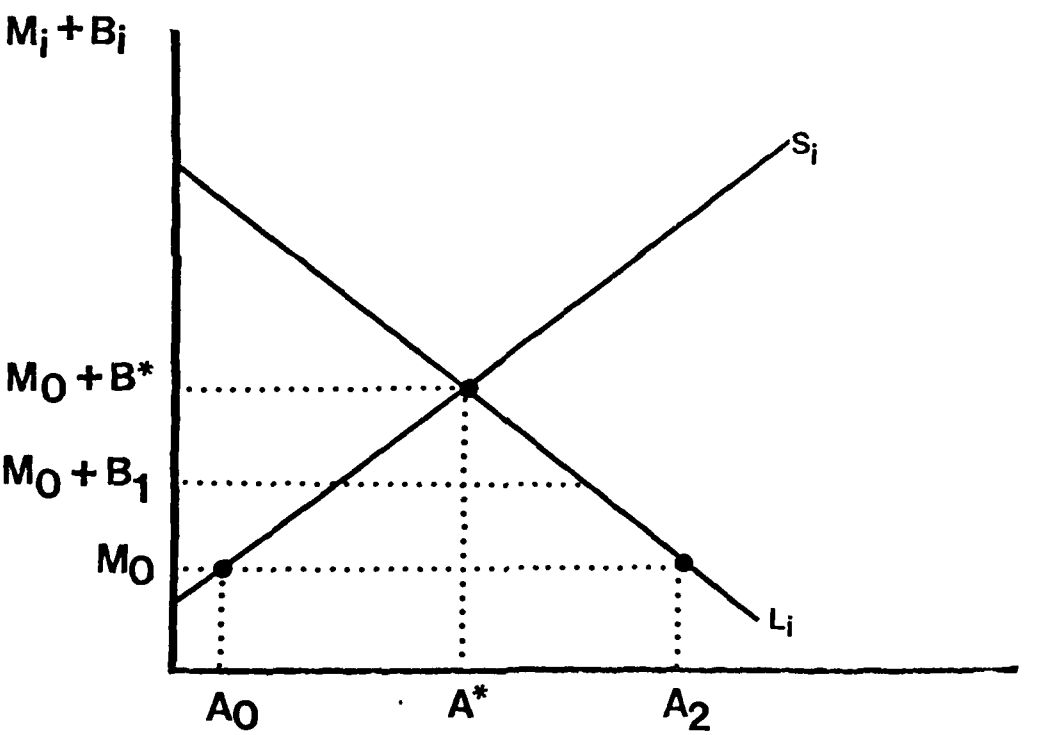
Given these assumptions, equilibrium is the ith and AFSC requires that

$$(16) \quad S_i(m_i \overset{+}{+} B_i, \overset{-}{c_i}, \overset{-}{\theta_i}, \overset{+}{\gamma_i}) = L_i(m_i \overset{-}{+} B_i, \overset{+}{c_i}, \overset{+}{\theta_i}, \overset{-}{\gamma_i}, \overset{+}{F_i})$$

where F_i is the manning requirement for the ith AFSC and the military wage has been explicitly displayed as the sum of the bonus, B_i, and non-bonus, m_i, components. For many AFSCs the Air Force finds that in the absence of a bonus the manpower requiremenets cannot be met. This situation is illustrated in Figure 7. M_o is the military wage in the absence of a bonus. At this wage A_o recruits show up and the mean length of stay of airmen with this job is given by M_i $(m_o, \cdot)$. However, at this wage the Air Force would need a flow of recuits equal to A_2 if it is to meet the manning requirements, F_i. Clearly, there will not be enough men in this AFSC. In order to attract more men into this job, suppose the Air Force offers a bonus equal to B*, i.e., offers a bonus which will equate supply and demand. In this instance, the manning requirement will be met with a flow of recruits equal to A*.

Figure 7

EQUILIBRIUM FOR A PARTICULAR AFSC



Formally, the optimum bonus can be derived by solving equation (16) for B_i, which gives

$$(17) \quad B_i^* = B_i(m_i, c_i, \theta_i, \gamma_i, F_i)$$

Furthermore, the impact of parameter changes on the optimum bonus can be ascertained by taking the total differential of (16). This yields

$$(18) \quad dB_i = \{dF_i - (m_i \frac{\partial S_i}{\partial m_i} + B_i + S_i \frac{\partial m_i}{\partial m_i} + B_i)\, dm_i - (M_i \frac{\partial S_i}{\partial c_i} + S_i \frac{\partial M_i}{\partial c_i})\, dc_i - (M_i \frac{\partial S_i}{\partial \theta_i} + S_i \frac{\partial M_i}{\partial \theta_i})\, d\theta_i - (M_i \frac{\partial S_i}{\partial \gamma_i} + S_i \frac{\partial M_i}{\partial \gamma_i})\, d\gamma_i\} / \{\frac{\partial S_i}{\partial m_i} + B_i + \frac{\partial M_i}{\partial m_i} + B_i\} .$$

Equation (18), then, implies the following:

$$\frac{\partial B_i}{\partial F_i} > 0 \quad , \quad \frac{\partial B_i}{\partial m_i} < 0 \quad , \quad \frac{\partial B_i}{\partial c_i} > 0 \quad ,$$

$$\frac{\partial B_i}{\partial \theta_i} > 0 \quad , \quad \frac{\partial B_i}{\partial \gamma_i} < 0 \quad ;$$

that is, a larger manning requirement or higher quality personnel means that a larger bonus must be paid in order to meet the manning requirement, while a higher non-bonus wage or quality of military life requires a smaller bonus.

Conclusion

Chapters II and III have illustrated the effect of "people programs" within the conceptual framework of a life-cycle model of career choice. The uniqueness of the approach is twofold: the individual considers the military as an entry-level occupation within a lifetime of work, composed of both military and civilian occupations, and the life-cycle model is extended to an aggregated level which considers accession and retention as an interactive, simultaneous system. In the econometric analysis of Chapter V, focus will primarily be upon the impact of "people programs" on retention. Allowances for the endogeniety of the Air Force manpower system will be made with the use of such factors as percent manning and force level. As the model suggests, the effect of "people programs" could be easily overshadowed by factors reflective of the time period analyzed, i.e., declining force level, G.I. Bill, draft-induced enlistees, etc. Chapters II and III have provided the conceptual framework for the econometric analysis of Chapter V and the assessment of the impact of "people programs" on retention.

CHAPTER IV

An Overview of the Data

Introduction

The time period covered by the analysis of the people programs was July 1974 to December 1979. The date of the earliest UAR to be utilized is December 1974. The UAR data was assumed relevant for a time frame spanning plus or minus six months of the date of observation of the UAR. The values for variables which were observed semi-annually or tri-annually are assumed relevant for three months or less.

The analysis is loosely performed on windows in time which are based upon a common length of service for a group of airman who joined the Air Force in the same month. As closely as possible, the windows are consistent with Air Force reenlistment policy concerning the amount of accumulated active duty necessary before a first term airman can make a reenlistment decision. Subsequent to the first reenlistment the windows are consistent with policy concerning length of service on all reenlistment decisions following the first reenlistment decision. Thus, the windows by length of service which were used are the four-year window, the six-year window, and the ten-year window.

The second term decision has a wider variance in terms of when an airman's decision-making date may occur. The use of the probit technique, which depends upon individual data, minimizes the problem of missing airmen who have already made the second-term decision prior to the ten-year window. All independent variables are time specific in that they are measured at the date

on which the transaction occurred (the EDCSA date). Though airman may make their second term decision to reenlist or separate as early as seven years active duty, the value assigned to such market factors as the unemployment rate is the value consistent with the date of the transaction.

The method used to connect the decision date (EDCSA date) with the relevant values for the exogeneous data transforms the window to a block of time rather than a point in time. Windows match enlistment dates, but decision dates can range from 36 months to 72 months for the first term airman. Thus, the window is primarily relegated to a means of explaining the data. The basic difference between the four-year window and the six-year window is that some airmen will not have made a definite decision at the four-year window, prefering to delay the decision by extending.

Extensions were excluded from the analysis to concentrate on the first-term and second-term reenlistment decision, a full four year commitment. At the six-year window, few airmen are lost, since extensions can not exceed 24 months. At the four-year window, extensions compose a much larger portion of the total airmen in each AFSC. Thus, the results of Chapter V and Appendix C support the use of the six-year window as a better performer overall, due possibly to the degree of uncertainty (extensions) existing at the four-year window. Thus, it should be noted that the analysis more accurately refers to first-term and second-term decision makers rather than four-year, six-year, or ten-year windows.

The windows provide an easier mode within which to explain the data, since some of the variables are decision date specific and others are DOE specific. The windows were used as a guide for constructing the data base on which the analyses were performed. The connection between the actuall decision date and the relevant values for the independent variables was a part of probit program itself. The usage of the windows as a guideline for building the data base also facilitated the quality control checks performed on the data base to insure that decision dates were properly matched with the values of the right-hand variables.

Since the time frame used for the analysis is a decision date time frame, the dates of enlistment (DOE) for each window are different, and, as previously indicated, not strictly enforced. To determine the DOE for a particular window at a point in time, the amount of the window plus one month is subtracted from the decision date. For example, the DOE for an airman at the four-year window in June 1978 is May 1974. This will be the method used for presenting the data for this chapter. Table 4.A presents the windows and the DOE time periods which are represented in the analysis. In each case, the DOE time period relevant for the window is different though the number of months covered in the analysis is always the same.

The AFSC's used in the analysis are given in Appendix B (Data Description Appendix). Initially, the study began with fifteen AFSCs, but eventually the analysis was trimmed to thirteen or fourteen AFSCs due to insufficient observations,

Table 4A

DOE by Window

Window	Corresponding DOE
Four-Year	June 1970 to November 1975
Six-Year	June 1968 to November 1973
Ten-Year	June 1964 to November 1969

leading to singularity in the analysis. Most of the reductions in orginal sample sizes were due to missing data and the number of separations in the first 35 months of service. Given the number of variables in the estimating equations, too few observations existed in some cells being analyzed for the estimation procedure to converge. Fortunately, only a few of the AFSC's exhibited this problem and, of the AFSC's plagued with the problem, the nonconvergence or singularity usually occurred at only a single window. Each AFSC number was tracked throughout the time period to capture any AFSC number changes. For the AFSC's chosen, no significant code changes occurred.

The AFSC's analyzed predominantly carried a selective reenlistment bonus (SRB), with the exception of 811x0's and 702x0's. The 811x0's, security specialists, received an SRB in 1980, which was outside the time period analyzed. In the early part of the time period, airmen also received regular reenlistment bonus, but a maximum amount for combined first and second term bonuses existed. Reenlistment bonuses were specific to decision dates, with the SRB multiples frequently changing throughout the time period. Reenlistment bonuses were also specific to first-term versus second-term decisions with the magnitude of basic pay to which the multiple applied being smaller in the second-term decision, as well as, contingent upon the total bonus the airman had received in the first-term reenlistment decision (Refer to Air Force Regulations 35-16 for further details). Of the 14 AFSC's analyzed (excluding 203X0's), only six received an SRB multiple in the second term: 272 X 0,

276 X 0, 303 X 2, 304 X 0, 316 X 0, and 811 X 0. Of the six AFSCs receiving a second term SRB, only 272 X 0 and 276 X 0 received the bonus for the whole time period analyzed. In all cases but two, 272 X 0 and 303 X 2, the multiples were equal to one. Thus, the relative magnitude of total bonus, RRB plus SRB, to total military pay is smaller in the second term versus the first term for the majority of the AFSCs analyzed.

Data used in the analysis can be partitioned into four groups: 1. Data applicable and unchanged across AFSC's. 2. Data specific to AFSC's. 3. Retention data. 4. People program data. The remainder of the chapter will use this partition as a means for discussion of the data. All plots for AFSC specific data will be relegated to Appendices D through L.

General Data Elements

Five data elements are generalized to all AFSC's, though some correspond to decision date versus DOE, while others change by window. To provide the reader with a better understanding of the change in the data element over the time period analyzed, time series plots are provided, in both nominal and real terms where relevant. The plots will indicate the level of variation exhibited by the data elements, e.g., the unemployment rate and the military wage.

The exogeneous variable which corresponds directly to the DOE is the induction rate. Since the DOE time frame changes at each window, a different series for the induction rate exists for

each window. The induction rate is defined as the ratio of the number of inductions per month to the male civilian labor force of twenty plus years of age. The four-year and six-year windows also encompass the lottery as well as the draft, while the ten-year window has a DOE time frame prior to the lottery. Enlistees during the lottery entered the Air Force from January 1970 to December 1972.

Figures 4.1, 4.2, and 4.3 depict the time series trend in the induction rate for the three respective windows. Though the relevent DOE time periods miss such draft intensive events as the Berlin Crisis in late 1961, the largest induction rates since the Korean Conflict is captured in the six-year and ten-year windows, the U.S. involvement in Southeast Asia. This involvement and its concomitant effect on the cost of being drafted is reflected in the explanatory significance of the induction rate for retentionat the six-year (Refer to Chapter V). The four-year window covers a period in which inductions began to perceptibly lessen, ending in the all-volunteer force in July 1973. The induction is consistent with the DOE for each window. One would expect a high induction to foster higher enlistment ratio for the Air Force, as well as increasing the average quality of the enlistments. Unfortunately, draft induced enlistees for the Air Force are not likely to remain past their four year commitment and, thus, reduce retention at the first-term decision. One would expect the induction rate to not perform well at the second-term decision, since a significant number of the draft induced enlistees will have already left the service.

Figure 4.1

INDUCTION RATE

FOUR YEAR WINDOW

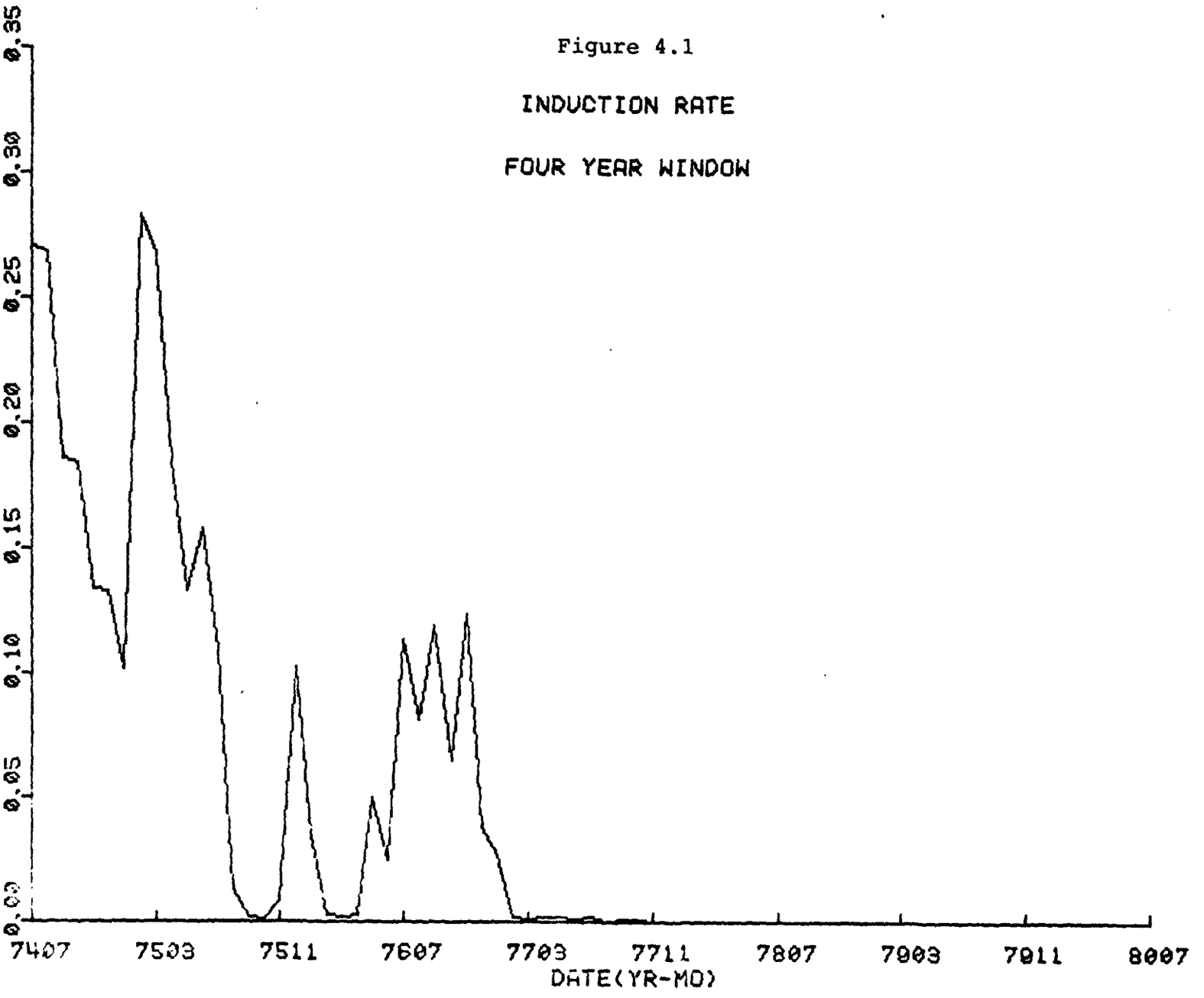


Figure 4.2

INDUCTION RATE

SIX YEAR WINDOW

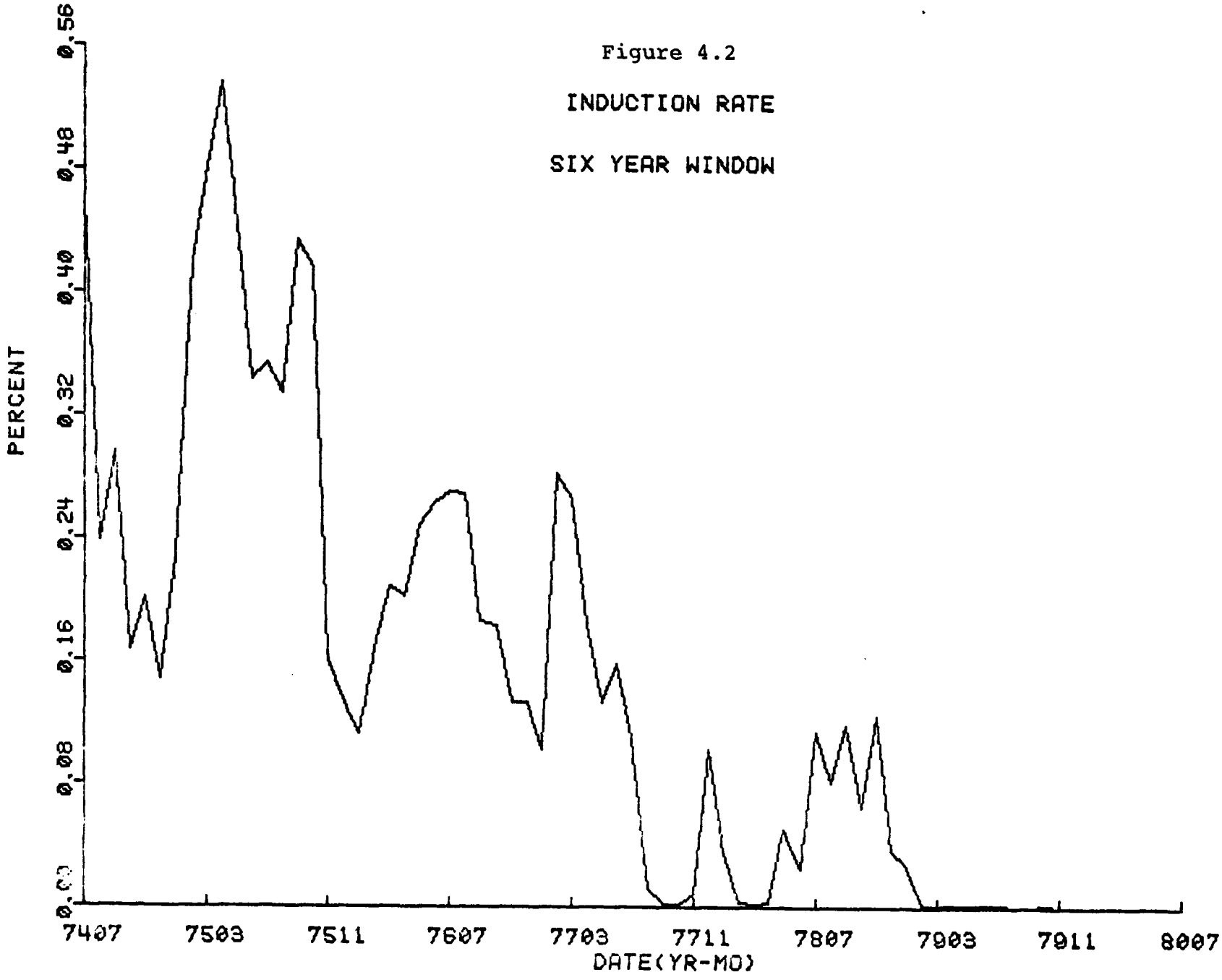
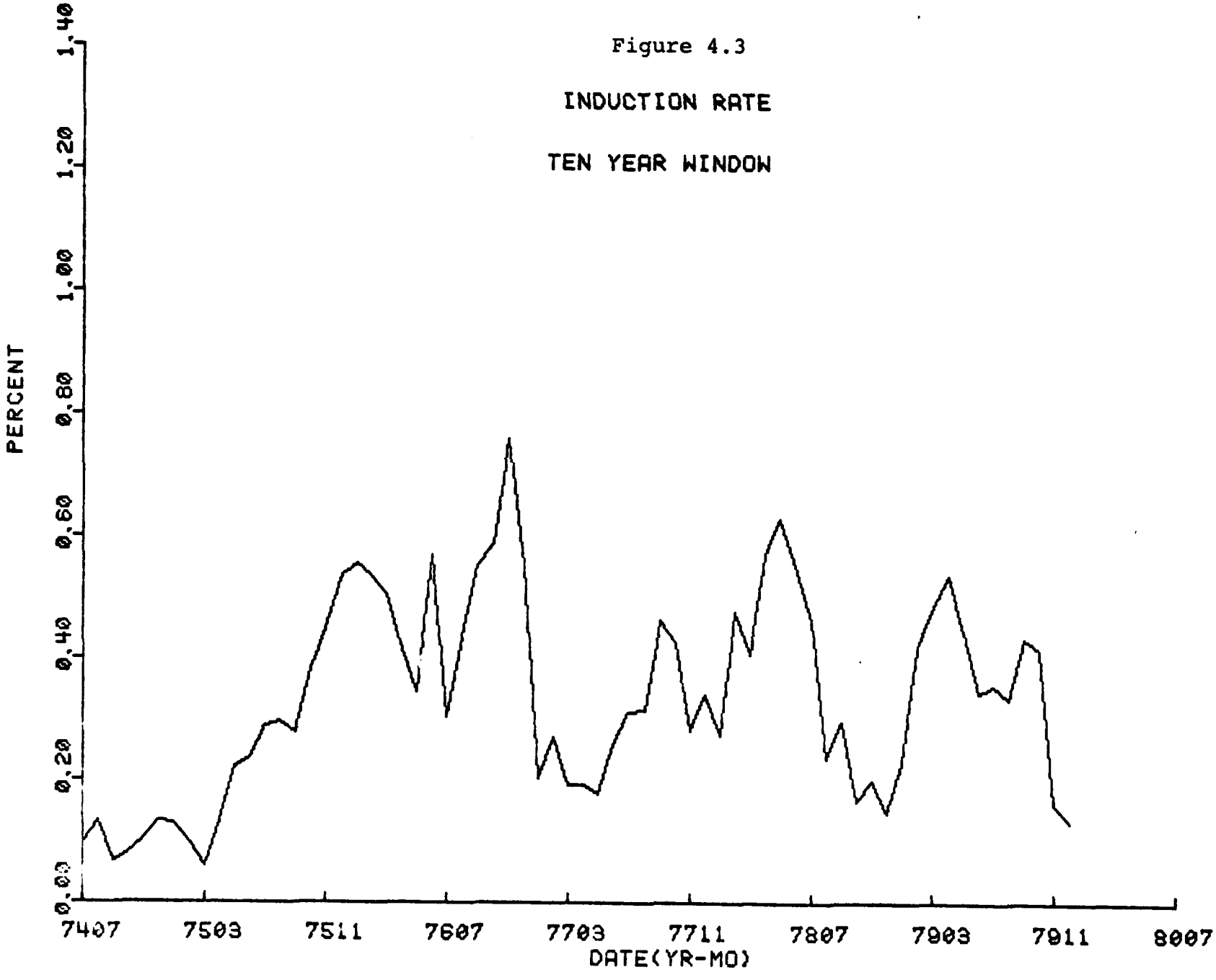


Figure 4.3

INDUCTION RATE

TEN YEAR WINDOW



Two unemployment rates were selected for the analysis: 1. The ratio of the number of unemployed men, twenty plus years of age, to the male civilian labor force, twenty plus years of age. 2. The ratio of the number of unemployed males, twenty-five to thirty-four years of age, to the male civilian labor force, twenty-five to thirty-four years of age. The twenty plus unemployment rate was chosen for the four-year and six-year windows, and the twenty-five to thirty-four unemployment rate was an exogeneous variable for the ten-year window. The unemployment rates were selected to reflect the expected average age of decision-makers, within the limits of the available data. Though the equivalent female unemployment rates were not observed, the loss in estimating accuracy is minimal since most of the AFSC's were dominated by men for the relevant DOE time period (the one exception being 702x0's). Most of the unemployment series tend to move together thus, the variation in a female unemployment rate is assumed to be comparable to the male unemployment rates. (Refer to Figures 4.4 and 4.5 for a comparison in the movement of two unemployment rates).

Figures 4.4 and 4.5 depict the time series movement in the two unemployment rate series during the time period analyzed (by decision date). Late 1974 through mid-1977 reflects a significant downturn in the business cycle, with recovery occurring from 1977 through 1979 as an election year approaches and the inflation rate begins to climb to its tumultuous levels of the late 70's and early 80's. Thus, except for the beginning crescendo, the unemployment rates exhibit a downward trend,

Figure 4.4

UNEMPLOYMENT RATE

(MALES, TWENTY PLUS YEARS OF AGE)

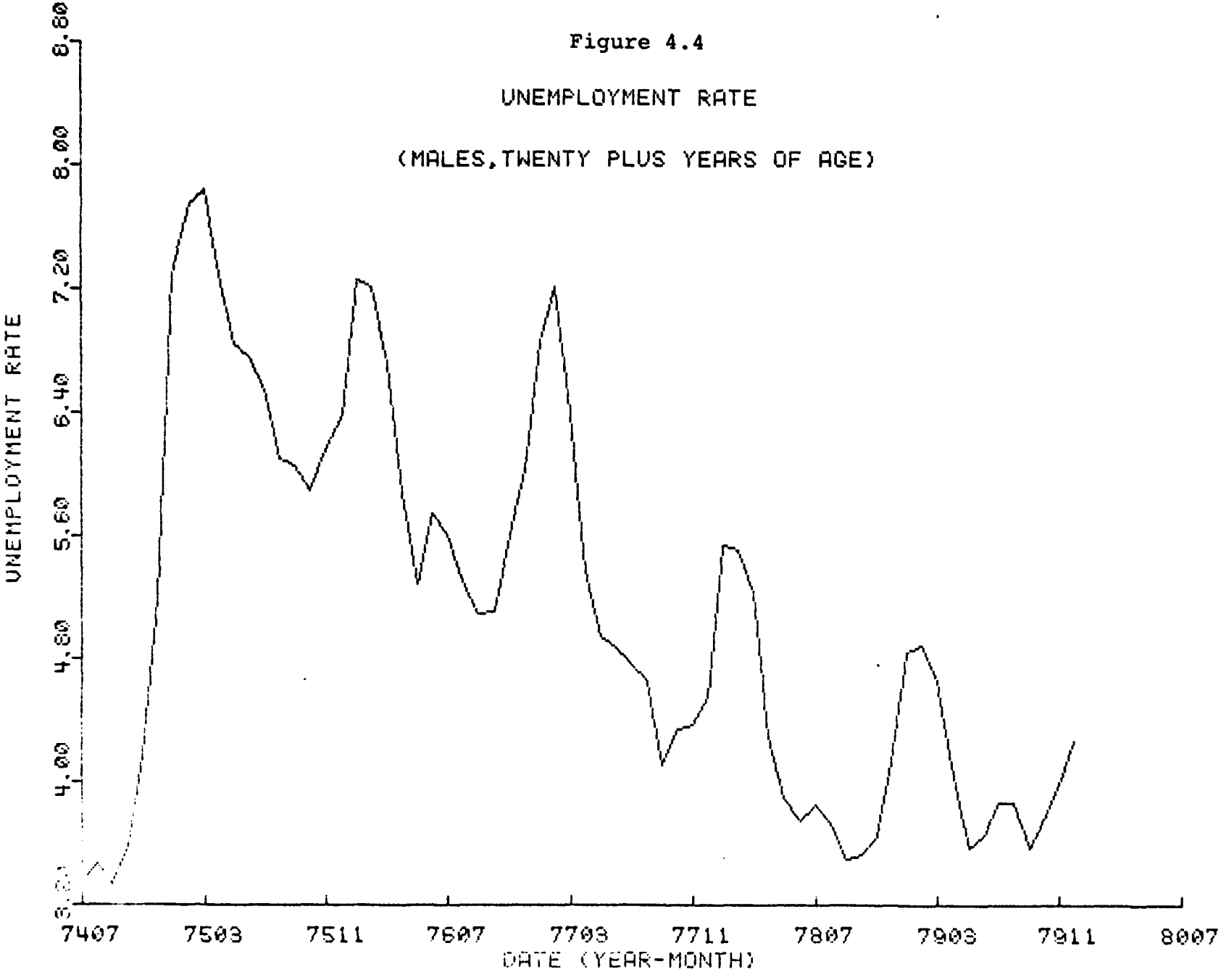
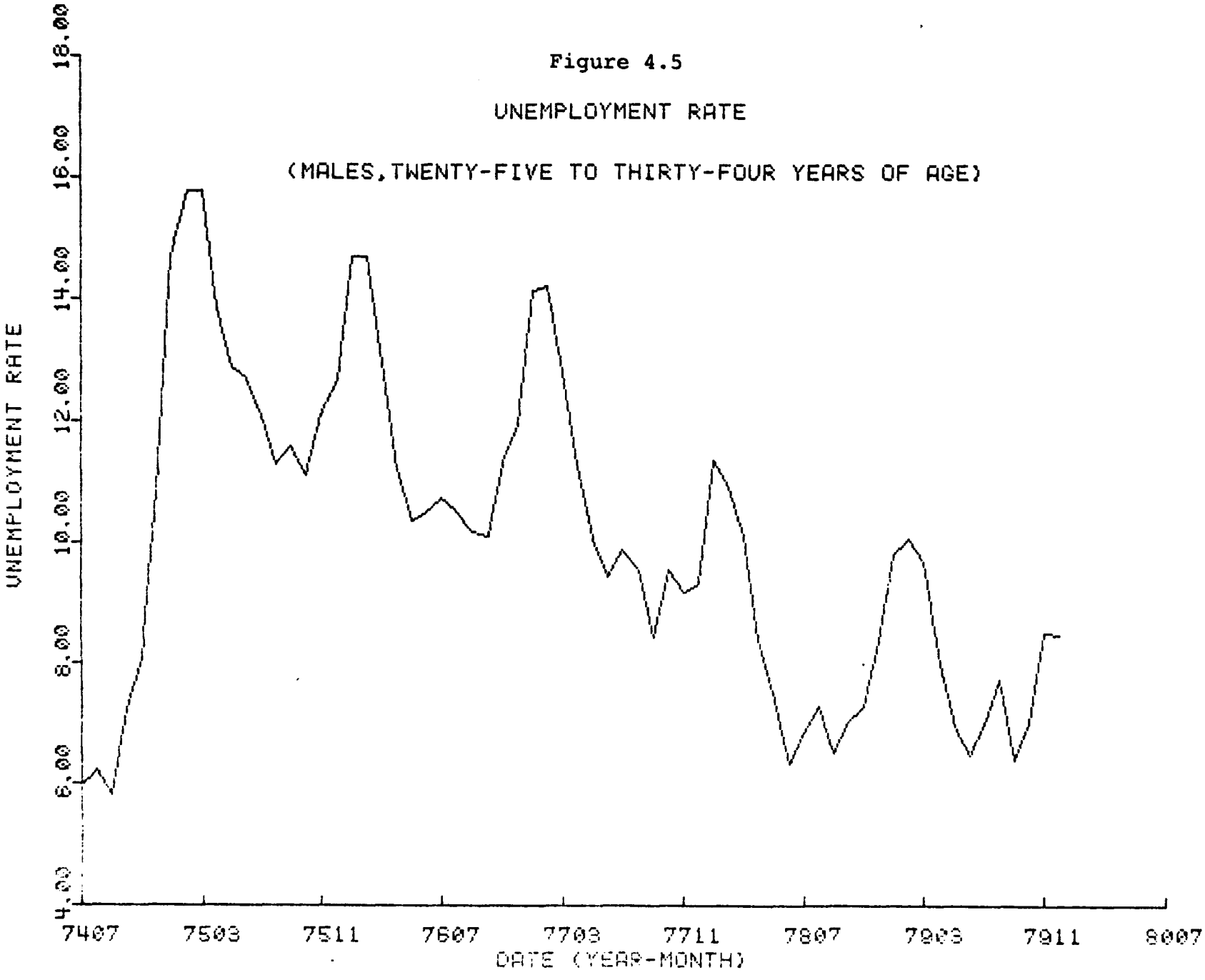


Figure 4.5

UNEMPLOYMENT RATE

(MALES, TWENTY-FIVE TO THIRTY-FOUR YEARS OF AGE)



though the standard deviations around the means measure about plus or minus 1.4 percent for the twenty plus unemployment rate and plus or minus 3.0 percent for the twenty-five to thirty-four unemployment rate. The unemployment rate is an attempt to capture the job opportunities available to the airman when the decision to separate or reenlist occurs. In some cases, an industry specific unemployment may be more appropriate, though matching the military occupation with the correct industry counterpart is not obvious. In several cases of the AFSC's selected for the analysis, the data for the civilian counterpart did not exist. For several AFSC's, i.e., 702x0's, and 811x0's, the airman may not enter a career field in the civilian sector comparable to his or her military career field.

The G.I. Bill was a factor considered for the time period analyzed, though one major change was implemented in the benefitprogram. In 1977, the Veteran's Administration instituted a matching contribution program in which the individual contributes a monthly sum of $75 or more to be matched on a $2 to $1 basis. The maximum dollars an airman can contribute during a military term is $2,700. The matching funds method reduced the attractiveness of the G.I. Bill as a means of obtaining a higher level of education. As Figures 4.6 and 4.7 indicate, the monthly payment for G.I. Bill did not change frequently from 1974 to 1979, with payments rising from $261 per month to $370 per month at the end of the time period. Figure 4.7 reflects a decreasing trend in the real value of the G.I. Bill payments (G.I. Bill payments divided by the Consumer Price Index), which also reduced

Figure 4.6

G I BILL PAYMENTS

(NOMINAL, TWO DEPENDENTS)

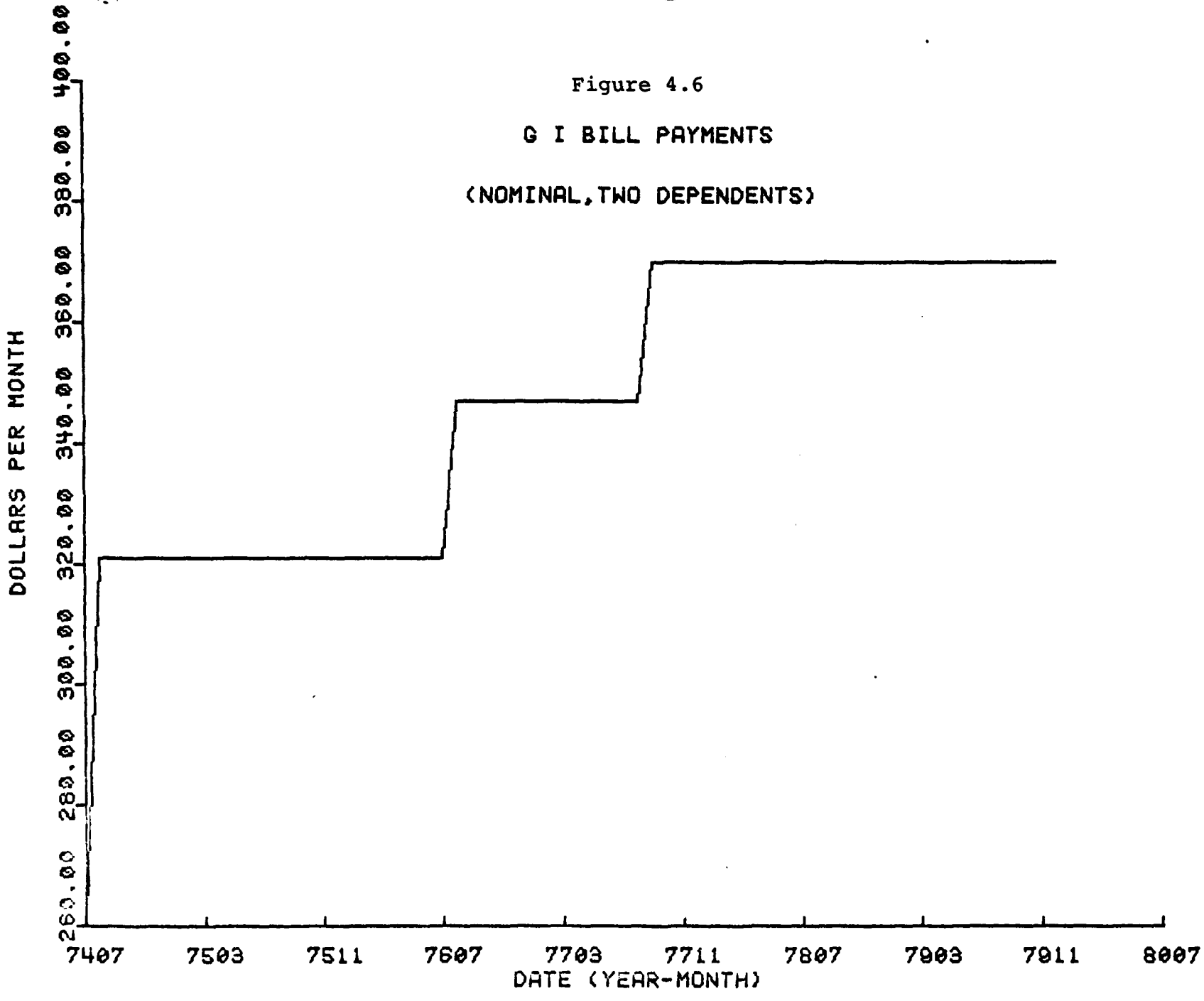
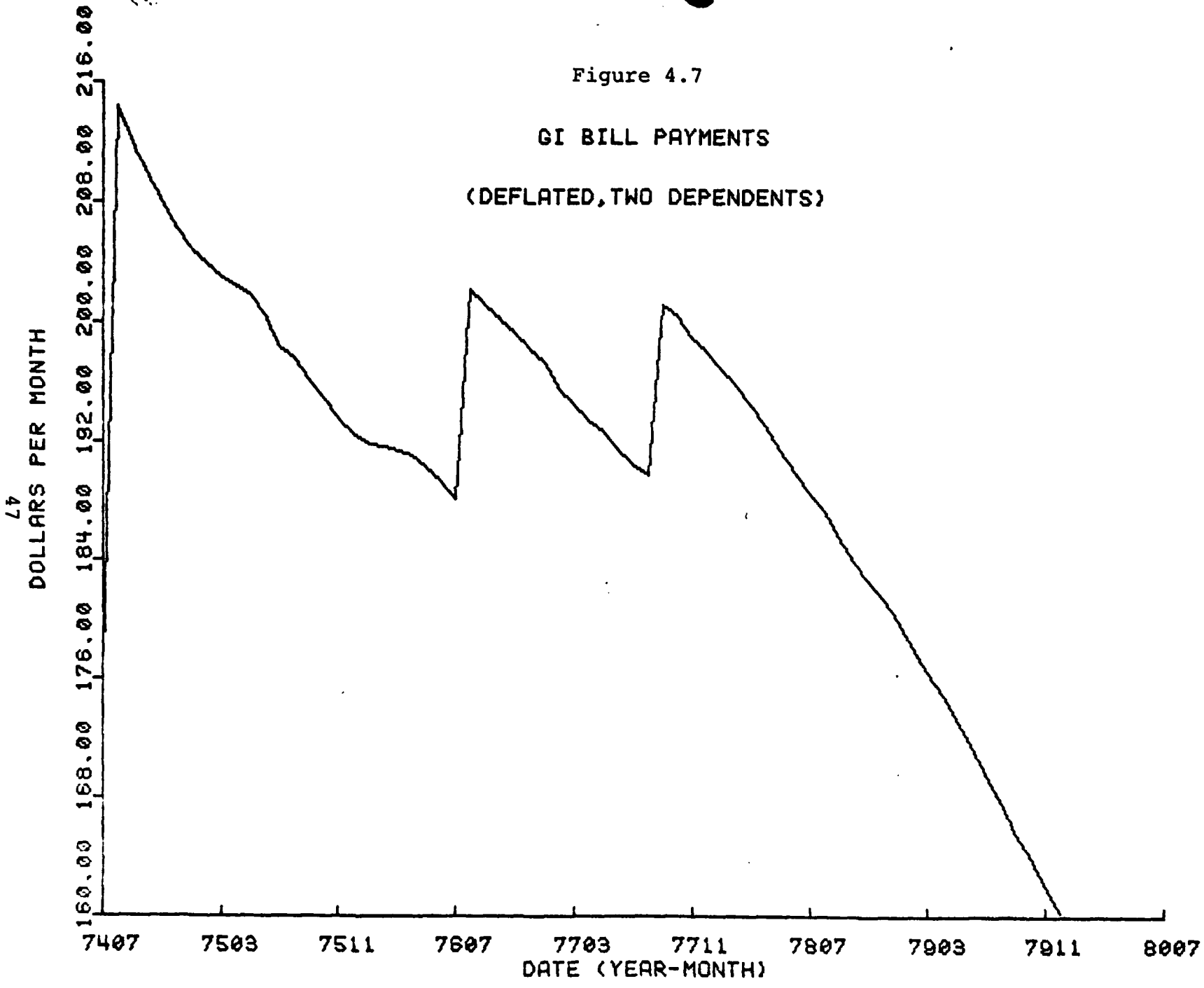


Figure 4.7


GI BILL PAYMENTS
(DEFLATED, TWO DEPENDENTS)
DOLLARS PER MONTH
160.00
168.00
176.00
184.00
192.00
200.00
208.00
216.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

its attractiveness.

The military wage used in the analysis was comprised of four parts: basic pay, basic allowance for quarters, basic allowance for subsistence, and reenlistment bonuses. With the exception of regular reenlistment bonus (RRB), the other bonuses in the analysis are AFSC specific. The military wage, excluding bonuses, is not only specific to windows, but also specific to marital status. Appendix B explains how the military wage was constructed to account for grade and length of service, which is responsible for its window specific relation. The military wage assigned to an airman in the analysis accounted for marital status, which affects the basic allowance for quarters. Figures 4.8 through 4.19 depict the variation in the military wages per month excluding bonuses from 1974 to 1979, in nominal and real dollars. The significant increase in inflation throughout the time period has resulted in a decline in the purchasing power of the military wage. Reenlistment bonuses, a lagging economy, and a declining force level have helped to offset the effect of the general decrease in the real military wage on retention for the time period analyzed.

The quarterly force level, as reflected in Figure 4.20, gradually declined throughout the 1974 to 1979 time period. As previously mentioned, the reduced level of the total force, in conjunction with the lagging economy and reenlistment bonuses mitigated the adverse effects of declining real military pay on retention. The large change in force level occurred with introduction of the all volunteer force (AVF), which was missed

Figure 4.8

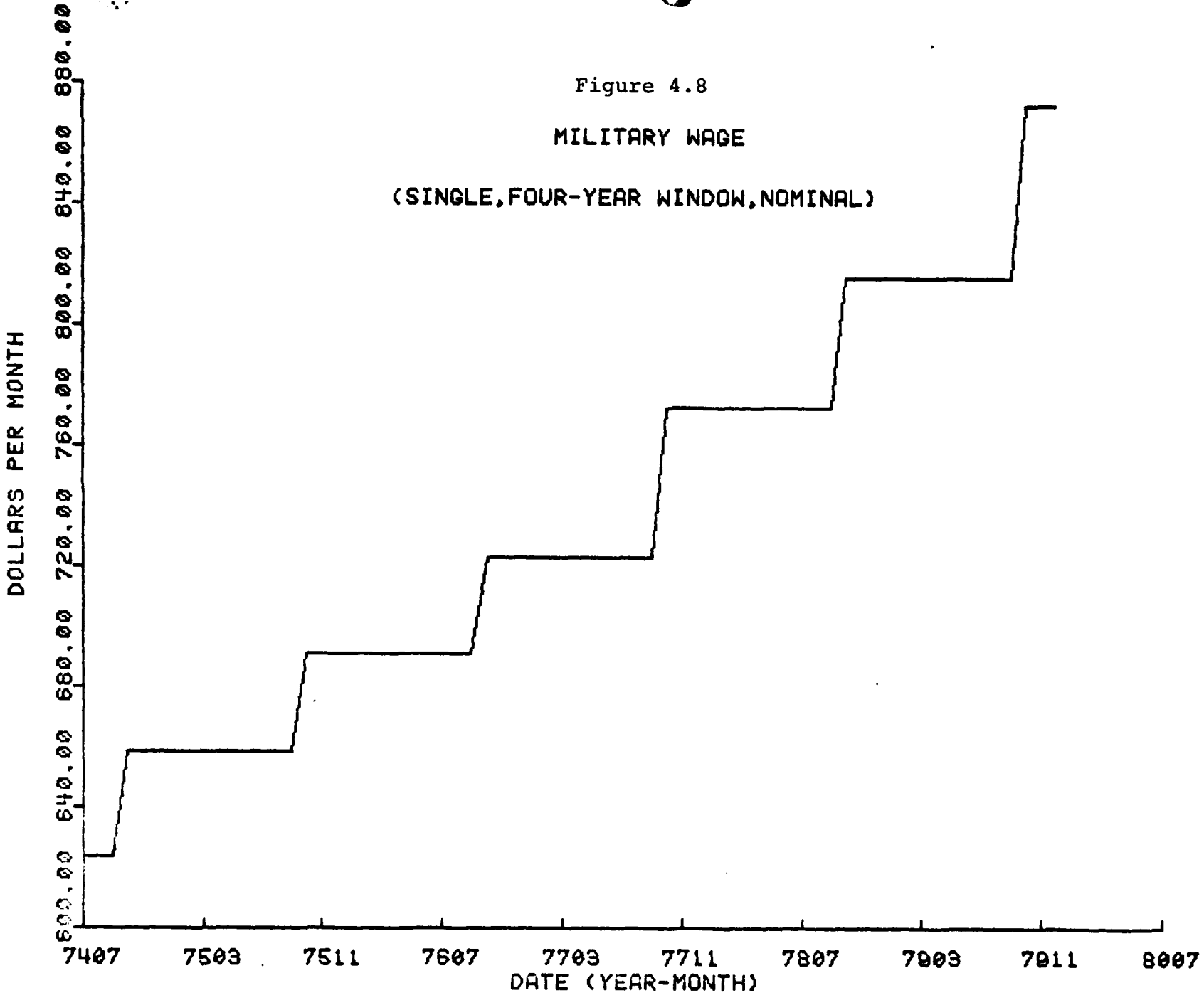

MILITARY WAGE
(SINGLE,FOUR-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
600.00
640.00
680.00
720.00
760.00
800.00
840.00
880.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

Figure 4.9

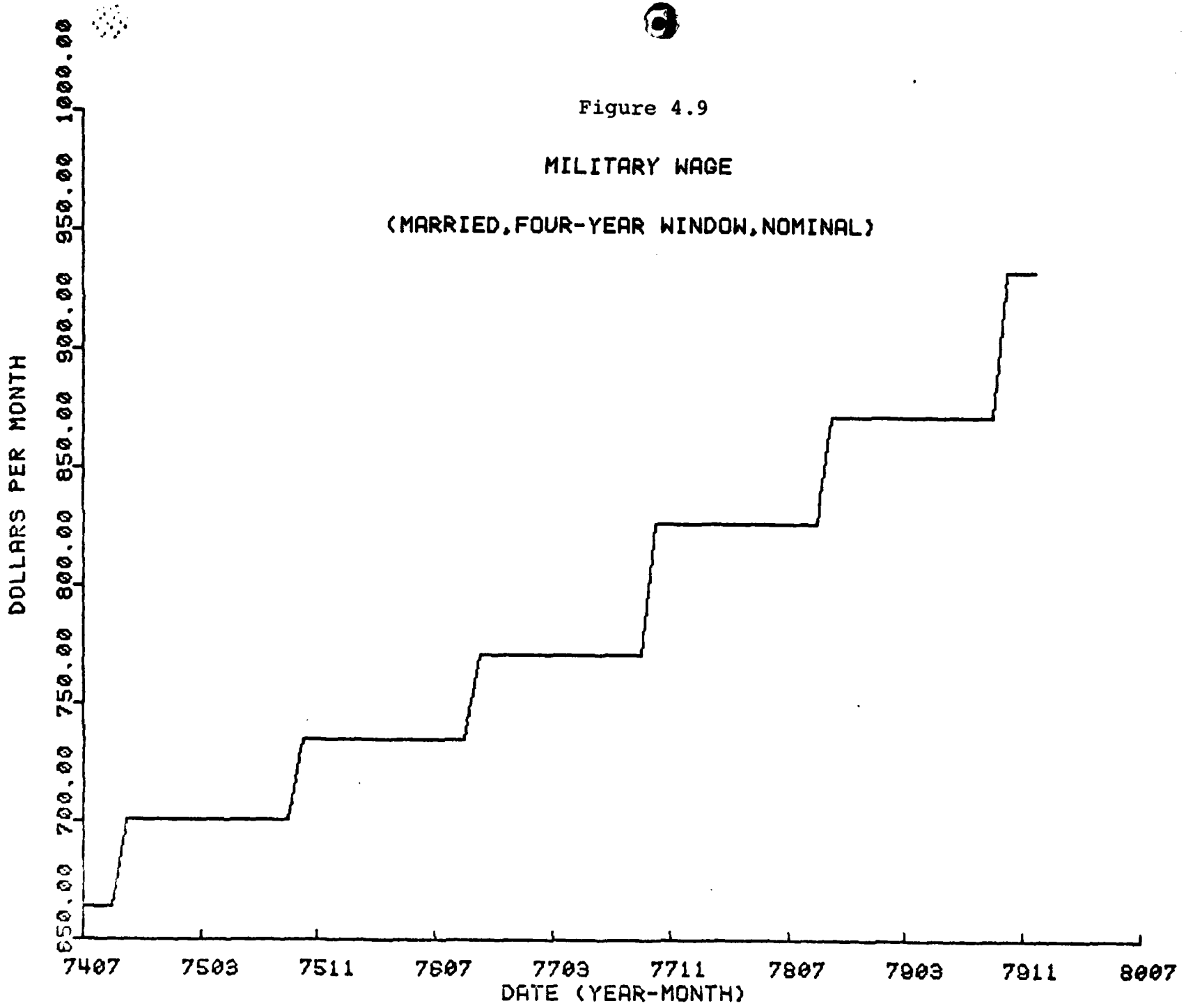

MILITARY WAGE
(MARRIED,FOUR-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
650.00
700.00
750.00
800.00
850.00
900.00
950.00
1000.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

Figure 4.10

MILITARY WAGE

(SINGLE, FOUR-YEAR WINDOW, DEFLATED)

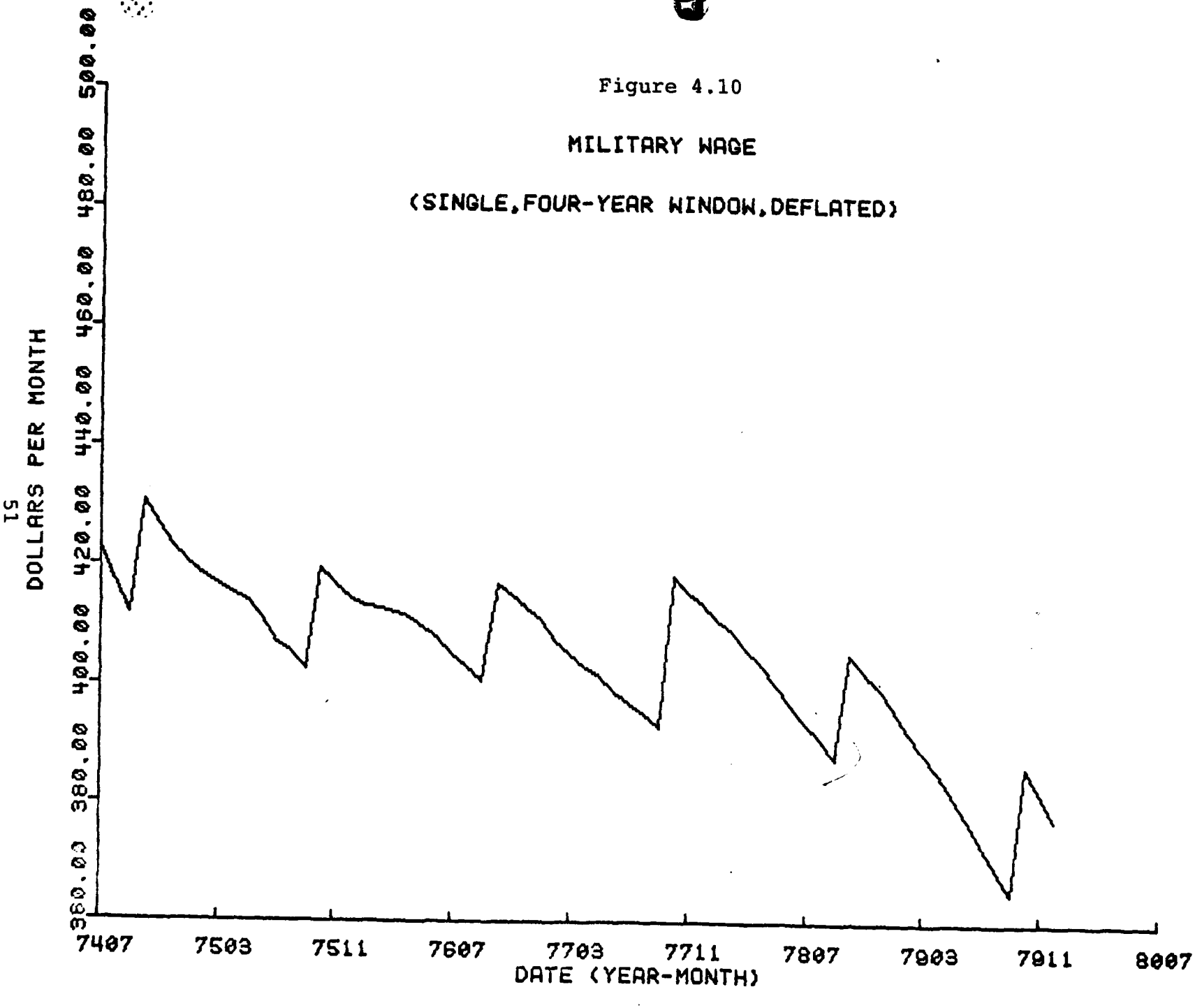


Figure 4.11

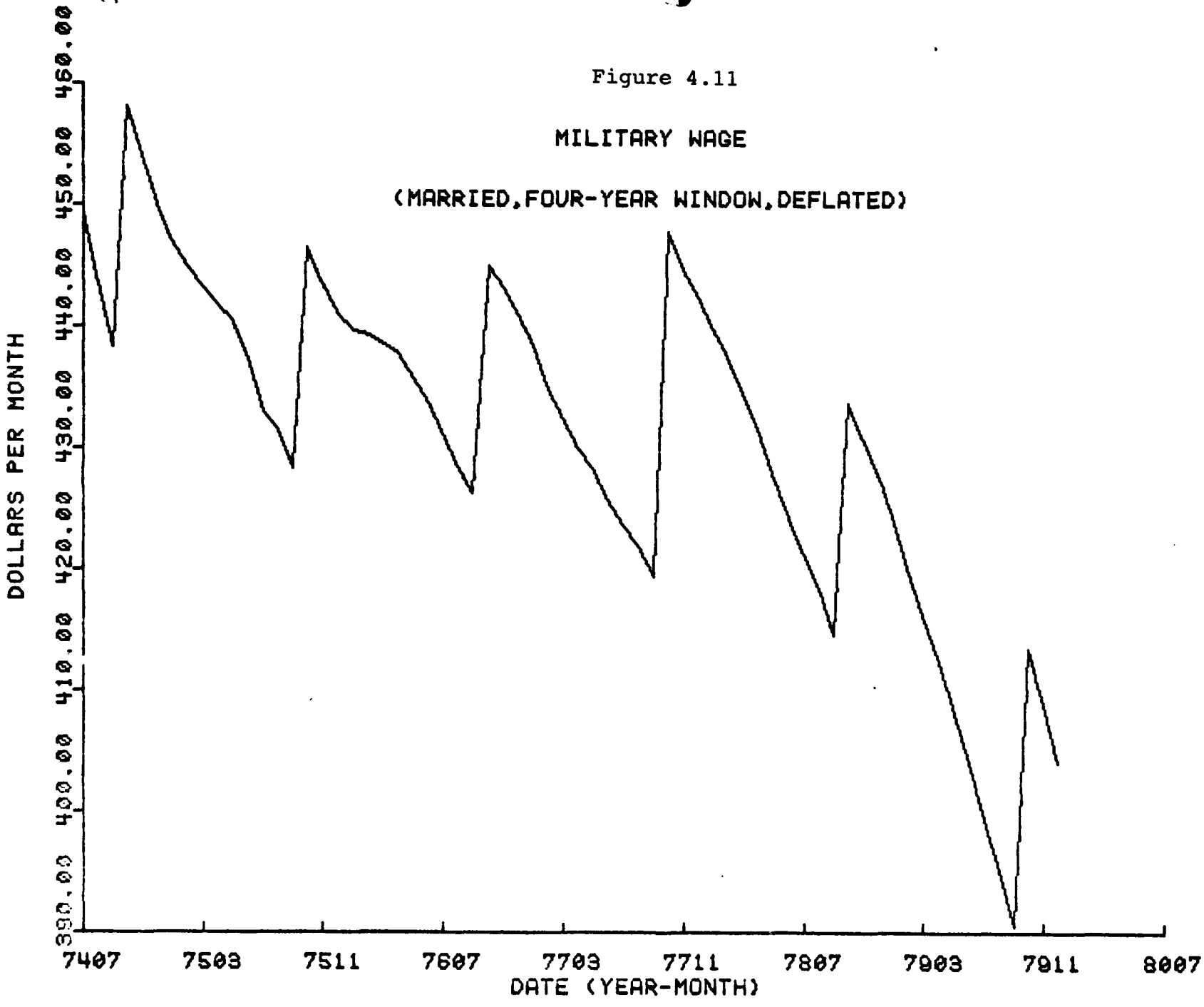

MILITARY WAGE
(MARRIED,FOUR-YEAR WINDOW,DEFLATED)
DOLLARS PER MONTH
390.00
400.00
410.00
420.00
430.00
440.00
450.00
460.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

Figure 4.12

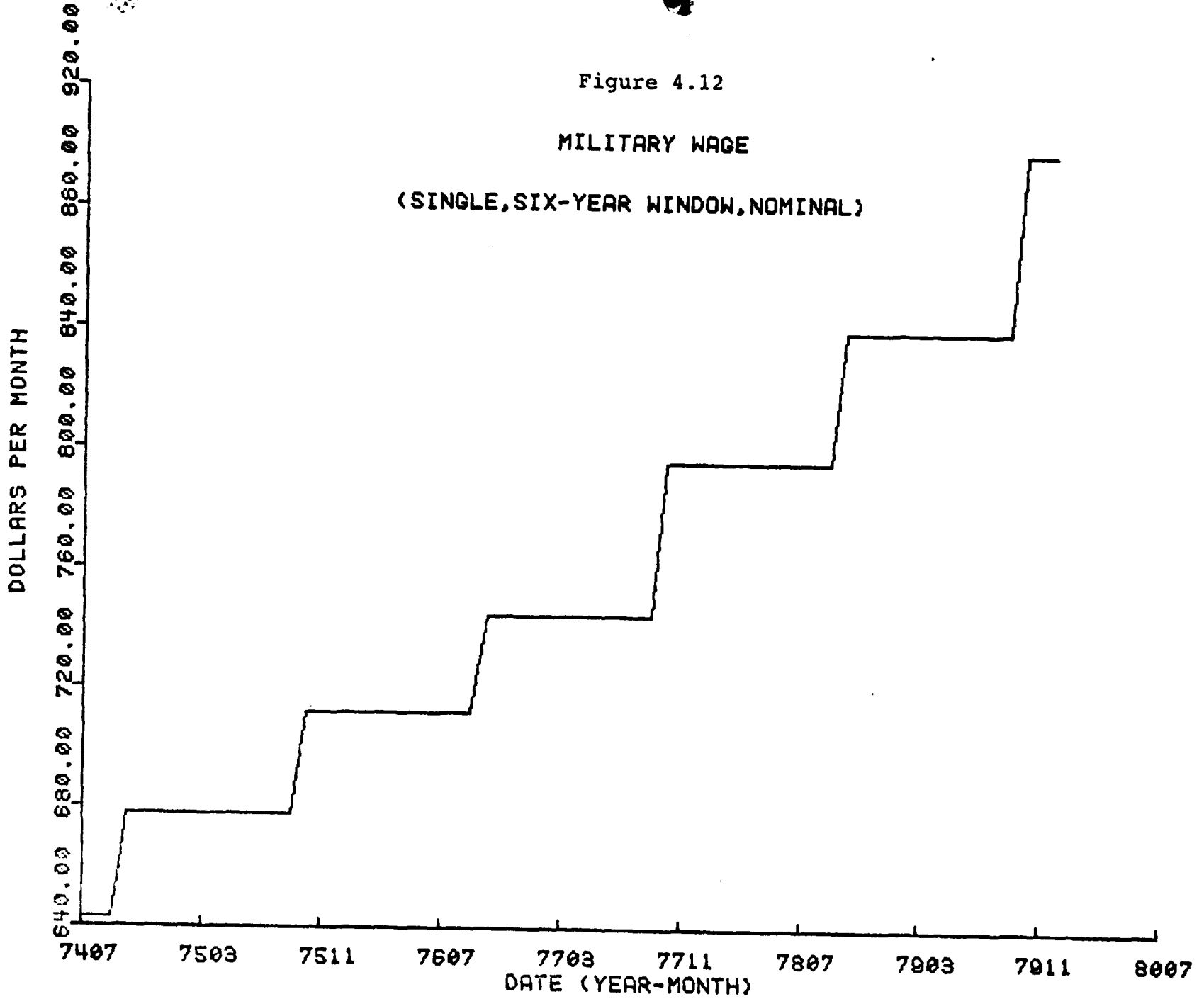

MILITARY WAGE
(SINGLE,SIX-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
640.00
680.00
720.00
760.00
800.00
840.00
880.00
920.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

Figure 4.13

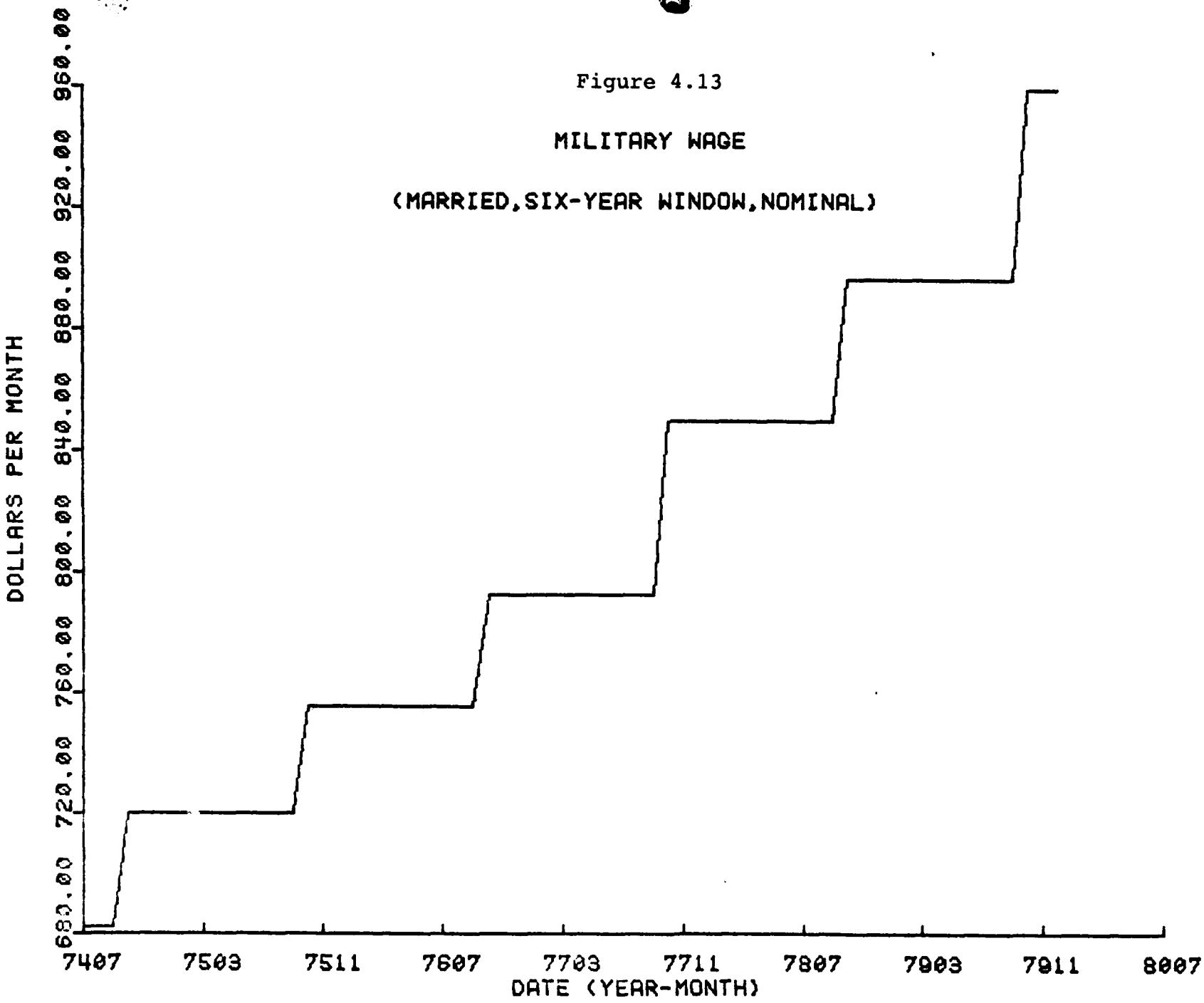

MILITARY WAGE
(MARRIED,SIX-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
680.00
720.00
760.00
800.00
840.00
880.00
920.00
960.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YEAR-MONTH)

Figure 4.14

MILITARY WAGE

(SINGLE, SIX-YEAR WINDOW, DEFLATED)

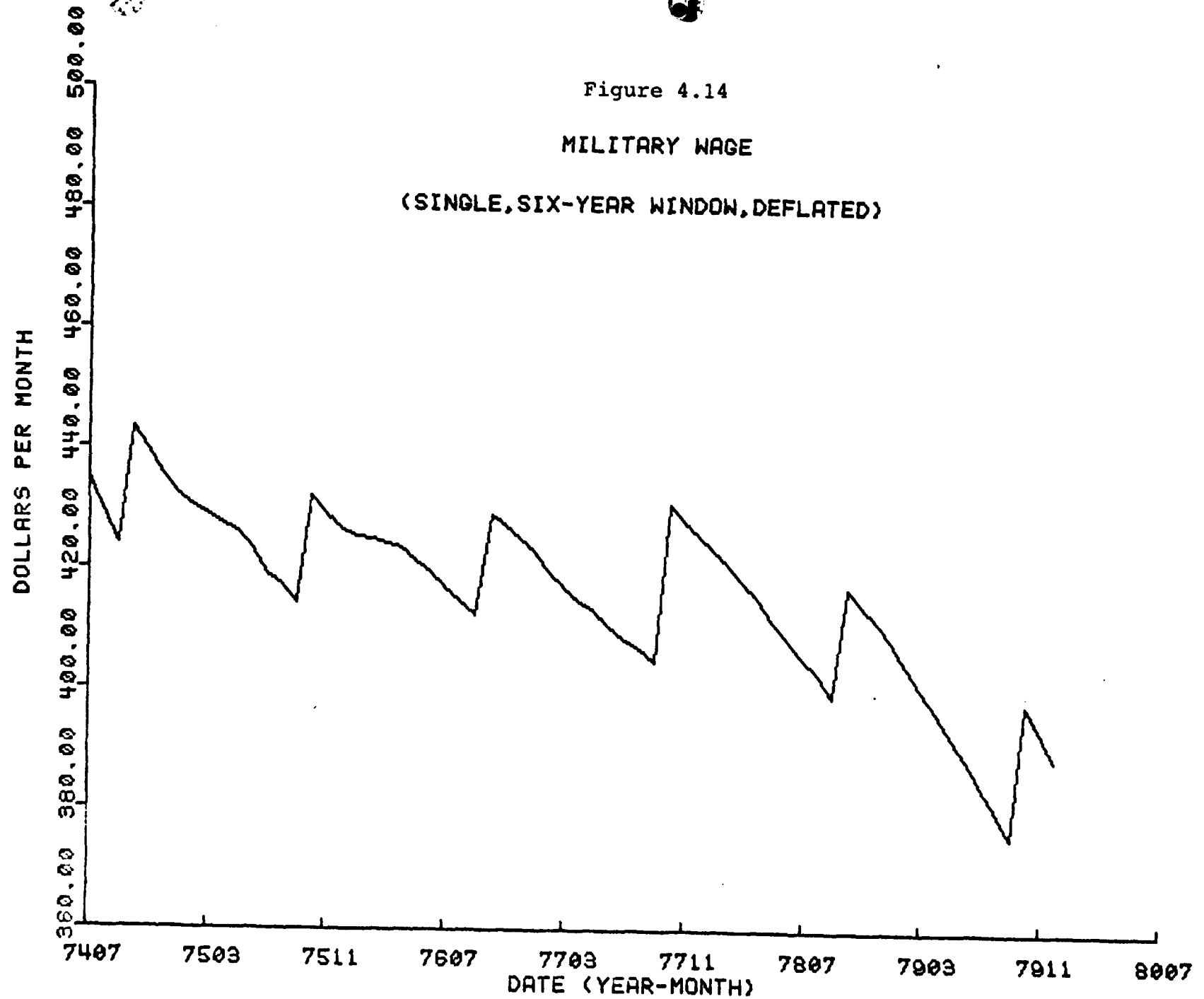


Figure 4.15

MILITARY WAGE

(MARRIED,SIX-YEAR WINDOW,DEFLATED)

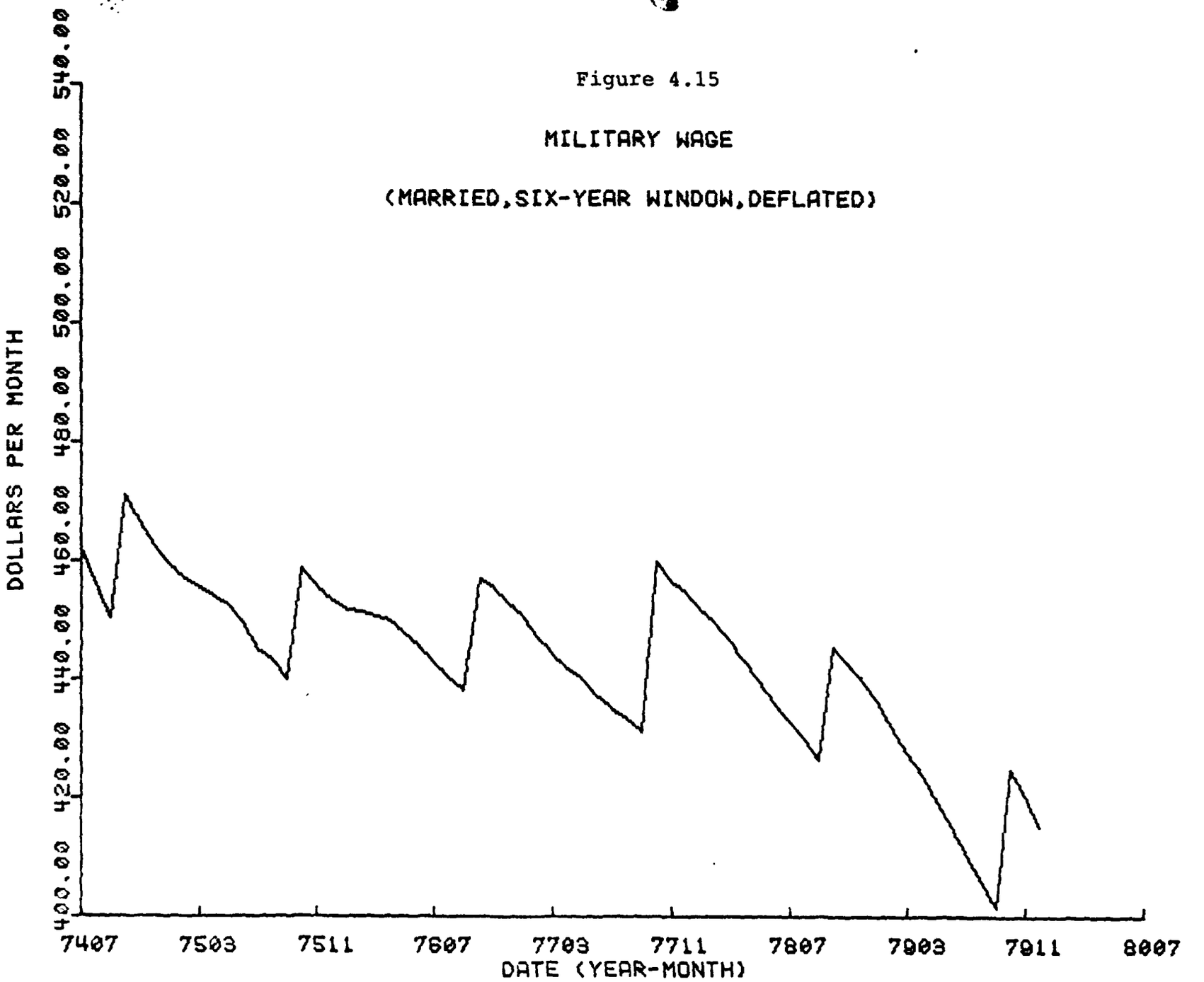


Figure 4.16

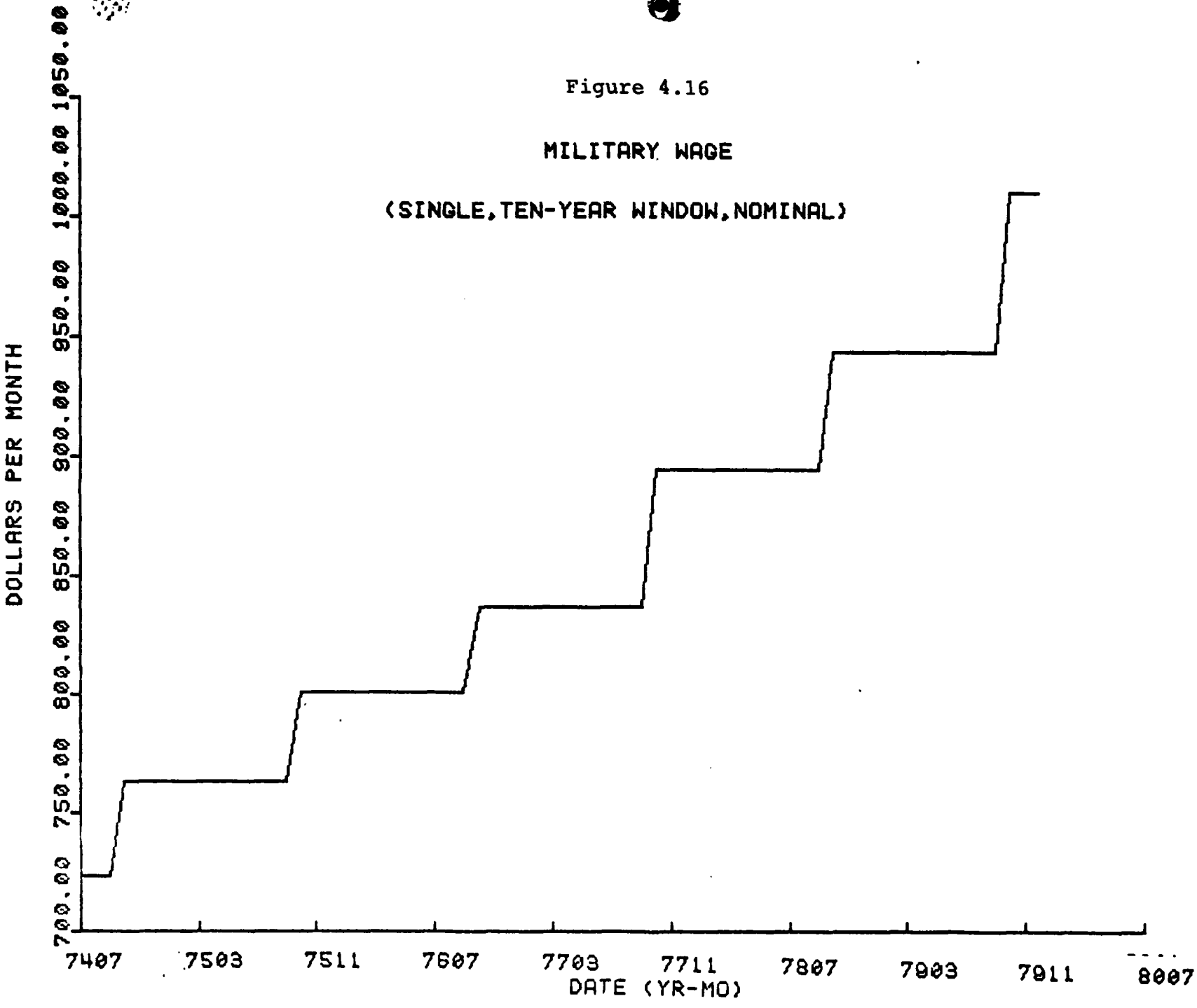

MILITARY WAGE
(SINGLE,TEN-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
700.00
750.00
800.00
850.00
900.00
950.00
1000.00
1050.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YR-MO)

Figure 4.17

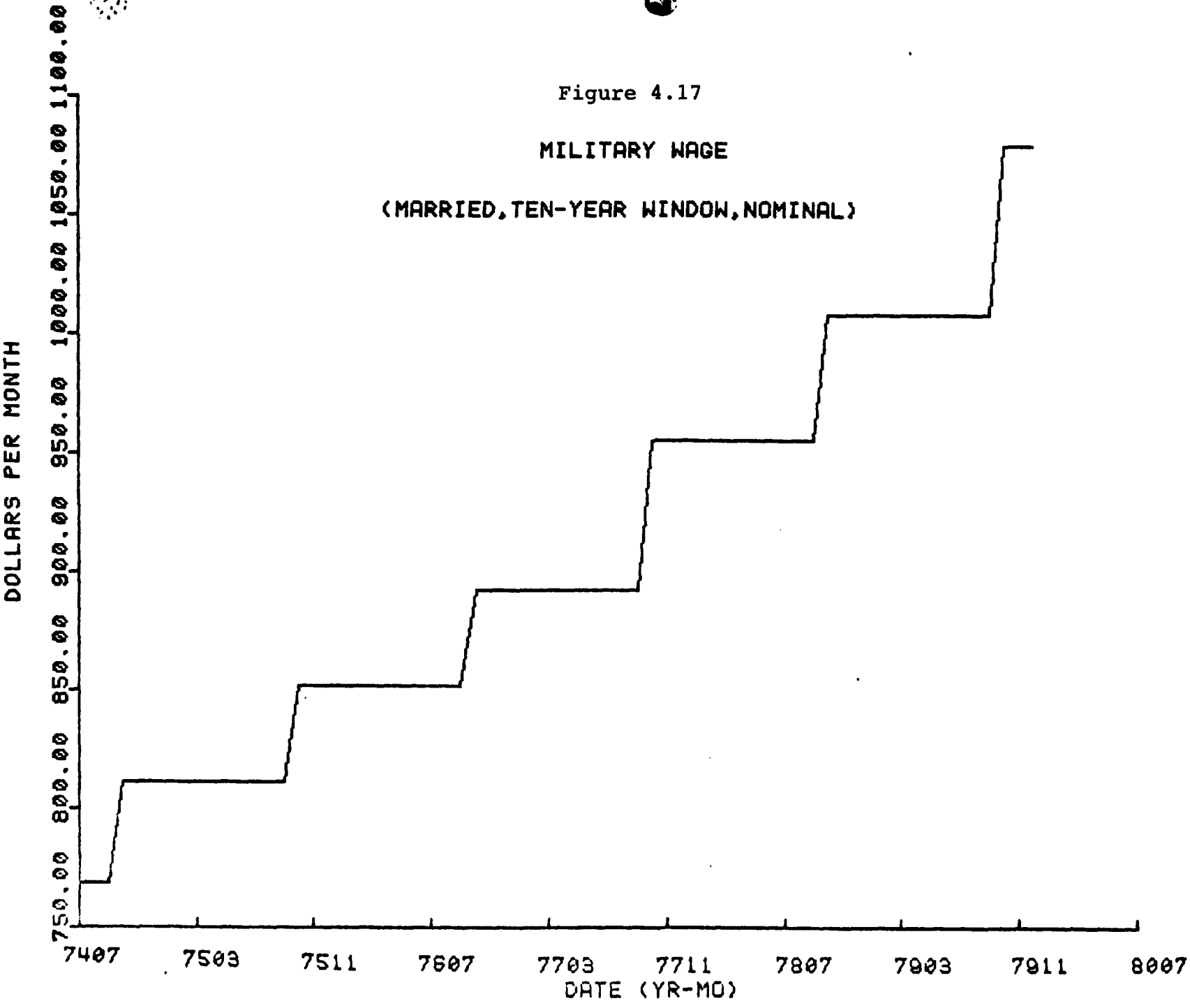

MILITARY WAGE
(MARRIED,TEN-YEAR WINDOW,NOMINAL)
DOLLARS PER MONTH
750.00
800.00
850.00
900.00
950.00
1000.00
1050.00
1100.00
7407
7503
7511
7607
7703
7711
7807
7903
7911
8007
DATE (YR-MO)

Figure 4.18

MILITARY WAGE

(MARRIED,TEN-YEAR WINDOW,DEFLATED)

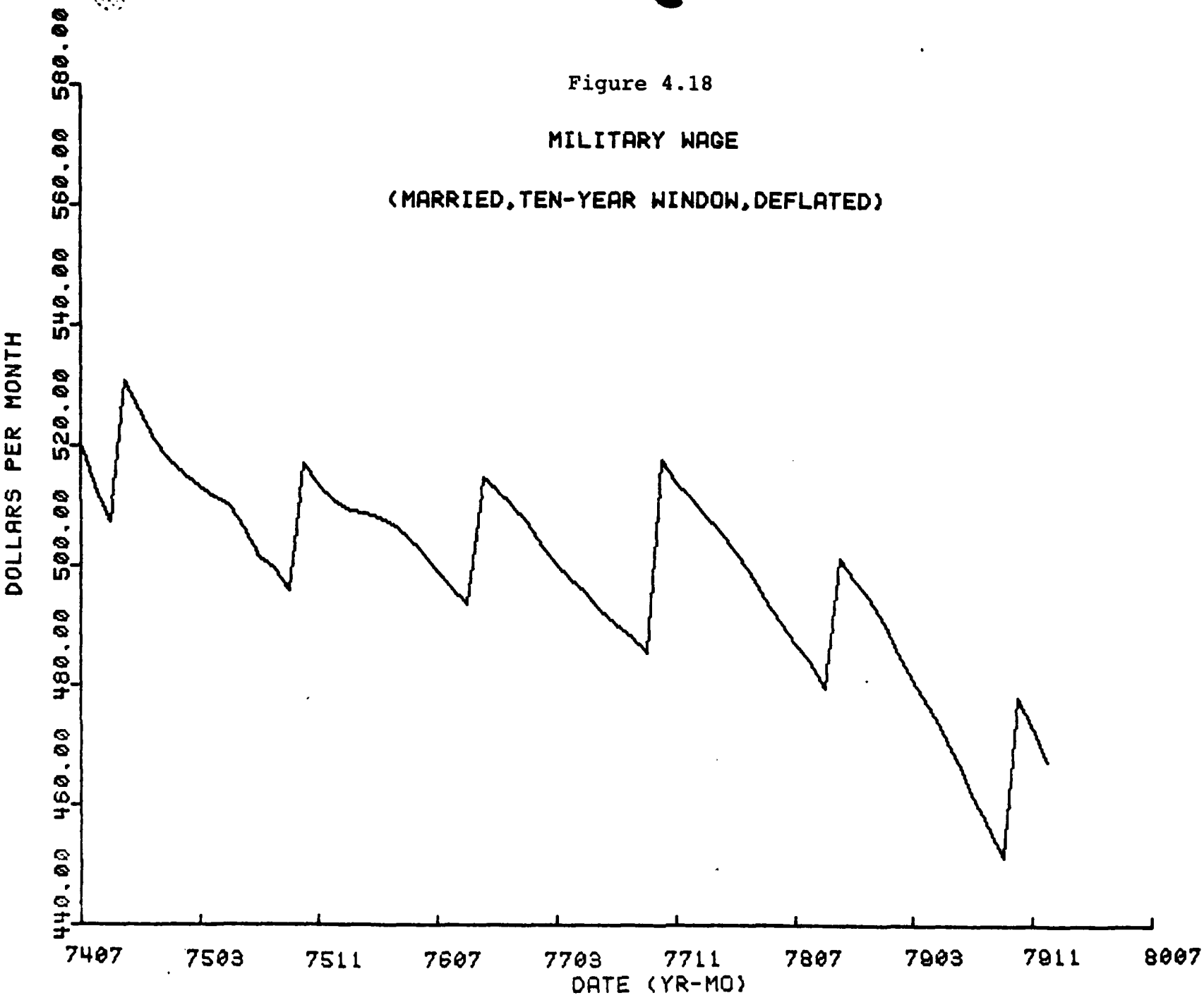


Figure 4.19

MILITARY WAGE

(SINGLE,TEN-YEAR WINDOW,DEFLATED)

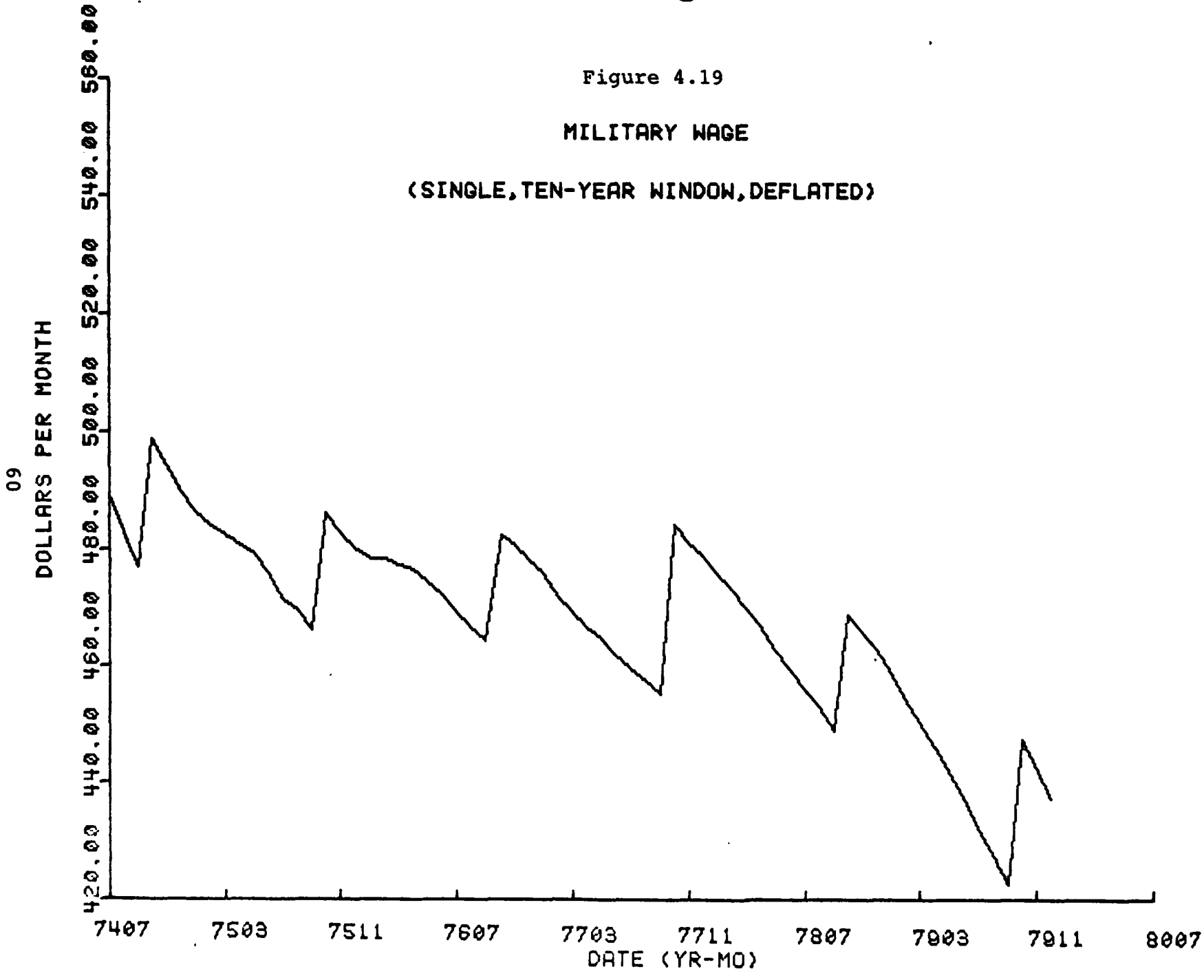
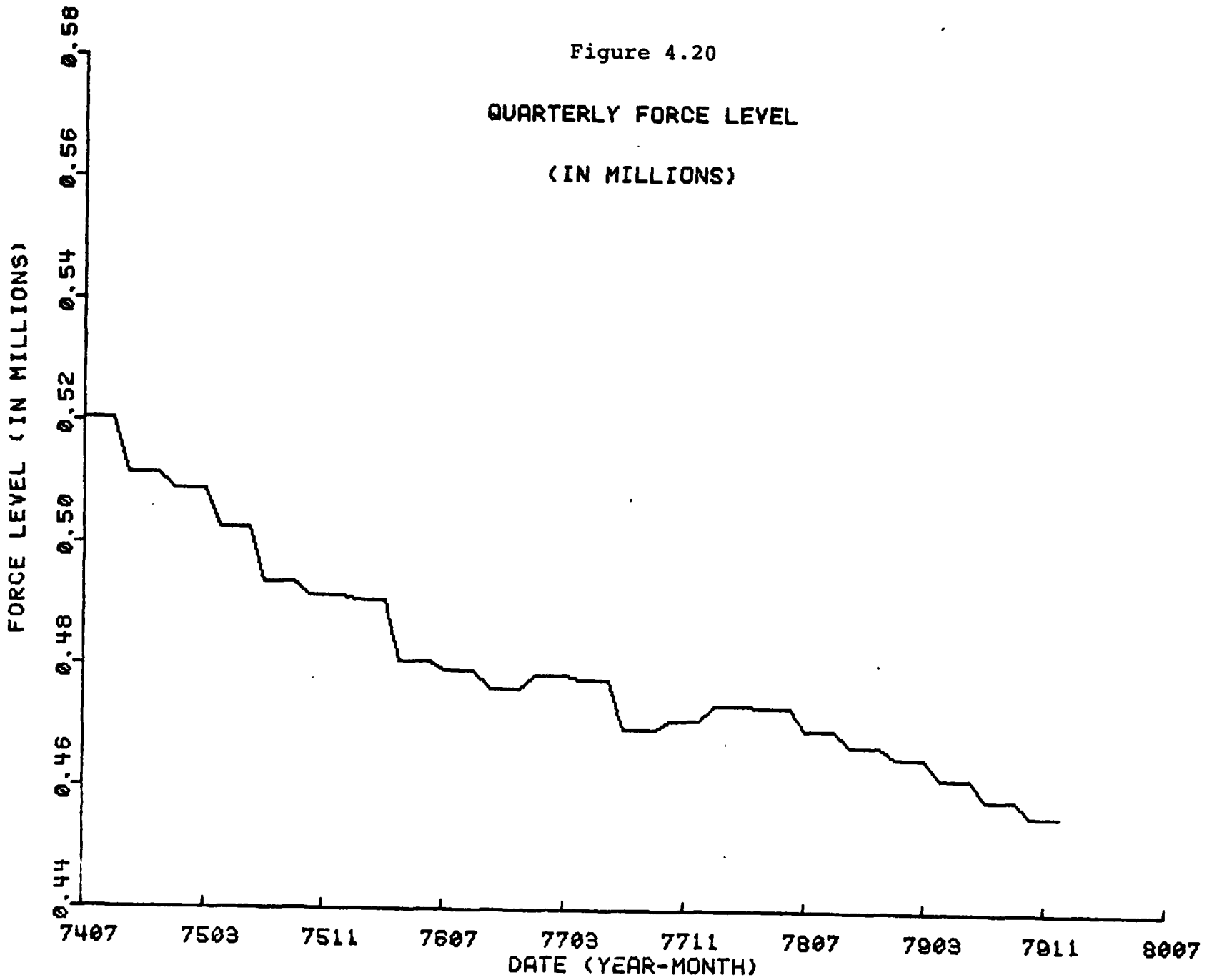


Figure 4.20

QUARTERLY FORCE LEVEL

(IN MILLIONS)



for the time period analyzed. From the results of Chapter V, missing the beginning of AVF did hinder the impact of the force level on retention. As Chapter V will illustrate, other factors were also positive contributors to retention during the time period.

Data Specific to AFSC's

Two variables which are specific to the AFSC's are also specific only to decision date: percent manning and the civilian wage. The percent manning is the ratio of the number of airmen assigned to an AFSC to the number of airmen who were authorized for an AFSC. The values used for percent manning are given for the end of the fiscal year. A quarterly series would have been preferred, but the series used did perform well. A quarterly series may have been able to better capture the degree of endogeniety involved in the retraining-bonus interaction as well as the degree of AFSC switching of airmen within their own skill capabilities during the fiscal year.

Figures D4.1 through D4.15 in Appendix D present the time series trend in the percent manning by AFSC (only the first three digits of the AFSC are quoted in the title; refer to Appendix B for the complete number). For most of the AFSC's, the figures exhibit a downward trend, which is the reason that the majority of the AFSC's have, at some point in the time period, been on a Chronic Critical Skills List. A few of the AFSC's have also either been considered or selected as candidates for enlistment incentives, a bonus which has ranged from $1000 to $3000.

The civilian wage for each AFSC is also presented in Appendix D. The civilian wage was chosen on the basis of the definition of the job responsibilities and duties for each AFSC as compared to their civilian counterpart. In some cases, a single civilian counterpart was used for more than one AFSC. Most of the civilian series experienced gradual increases in nominal terms for the period analyzed as depicted by Figure D4.16 through D4.40, in Appendix D, though the important relationship is the performance of the civilian wages relative to military wages. The figures reflect the fact that the civilian wages did not fair as well in real terms as in nominal terms, though in most cases, the real civilian wage experienced gradual increases in the early part of the time series.

Three variables were specific to both AFSC's and windows: 1. Relative military wage. 2. Reenlistment bonuses and relative reenlistment bonuses, and 3. Relative G.I. Bill payments. For the analyses, relative military wage and relative reenlistment bonuses were combined to represent the relative military to civilian pay package. Figures E4.1 through E4.88 Appendix E exhibit the variation in the relative military wage excluding bonuses by AFSC by window by marital status. Figures F4.1 through F4.60 in Appendix F present the total reenlistment bonus in nominal and deflated values by AFSC by window. Figures G4.1 through G4.30 in Appendix G present the relative total bonus by AFSC by window, with the ten-year window being represented by total reenlistment bonus for second-term decision-makers. As mentioned earlier, the amount of basic pay used for the basis of

the bonus multiple is different for first-term versus second-term decision. In addition, the multiples may change for the selective reenlistment bonus. Figures G4.31 through G4.45 in Appendix G present the relative G.I. Bill payments, which seem to be more significant at the ten-year window than the four-year or six-year window. (Refer to Chapter V).

For each of the aforementioned components of the relative military to civilian series, the variation over time is perceptibly different between AFSC's though some commonality exists due to the composition of the numbers. The relative total bonus for several of the AFSC's have experienced declines, from both the reduction in multiples and the rise in the civilian wage. The econometric analysis of Chapter V accounted for the differences created by marital status in the relative military pay including bonuses. The married relative military pay series differs only in magnitude from the single relative military pay series and, thus, both move parallel to each other. The step-ladder effect displayed by the relative military wage is due both to the once-a-year regularity of the military pay increases and the annual nature of the civilian wage. For further discussion of the relative military pay components refer to Appendix B.

Retention

One of the key variables in the analysis is the transaction identifier field from the Airman Gain/Loss File. The transaction identifier provides the information necessary to determine whether the airman has reenlisted, extended, or separated at the

appropriate window. Thus, a transformed version of the transaction identifier forms the basis for the dependent variable used in the analysis of Chapter V. Appendix B provides the breakdown of transction codes used for the analysis.

The windows were basically used to define the sample size for the first term and second term populations by AFSC. In essence, the window is used as a hurdle in time which the airman traverses by either reenlisting or extending (Refer to Appendix B for the mapping of transaction codes). Thus, a sample population for a particular window is composed of separations (airman who do not traverse the hurdle), extensions, or reenlistments. Airman who did not perform any of the three previous functions at a window in time were not included in the sample population. Thus, windows were effective in defining the sample population for the first term and second term, but within the probit analysis itself, the windows carried little meaning.

Two differences exist between the four-year and six-year windows, both of which are first term decision dates. First, the six-year window covers a different time period of airman (DOE) than the four-year window, though a significant degree of overlap exists. The six-year windows begins and stops at an earlier DOE than the four-year window. The analysis could have been restricted to the overlap periods, but degrees of freedom and variation in explanatory variables would have been sacrificed needlessley. Secondly, in the cases of the overlapping time periods, airmen who were extensions at the four-year window were predominately reenlistments or separations at the six-year

window. The latter difference possibly explains the better performance at the six-year window, where the "reenlistment" sample population is more strictly defined.

To visualize the variation in the number of reenlistments by AFSC over time, three rates were plotted for each AFSC, two continuation rates and an extension rate. The only difference in the two continuation rates is in the numerator, which either excludes extensions or includes extensions. The denominator is equal to the total number of enlistees with the appropriate DOE for the four-year and six-year window. The denominator for the ten-year window equals the total number of airman who did not separate at the six-year window. The extension rate captures extentions only with the denominator equivalent to the denominator of the continuations rates by window.

Figures H4.1 through H4.90 in Appendix H present the time series variation in the two continuation rates by AFSC by window. Figures I4.1 to I4.45 in Appendix I present a similar tracking of the extension rate by AFSC by window. A casual observation of either one of the above continuation rates will highlight the retention problems which have consistently occurred with most of the AFSC's analyzed. Of course, the month to month fluctuation in the continuation rates is erratic with high variability for several of the AFSC's, i.e., AFSC's 302x0 and 321x0. The extension rate has a similar type of fluctuation, showing a dominate influence at the four-year window, a minimal, if any, effect at the six-year window, and a varying influence between AFSC's at the ten-year window.

Figures J4.1 through J4.30 in Appendix J are a time series tracking of the ratio of eligibility to reenlist to the number of entering airmen by AFSC by window. The elibigility to reenlist variable is extracted from the transaction blocks of the Airman Gain/Loss File. The credibility of the field is in question from two points: 1. Missing data, and 2. The endogeneity of the value of the eligibility fo reenlist. One or both of these factors may contribute to otherwise unexplained fluctuations in the eligibility rate. The problem is more serious at the ten-year window, and, thus, the figures for the ten-year window have been excluded.

Figures N4.1 to N4.45 in Appendix N present the continuation rates and extension rate, and eligibility ratio for the force as a whole. Comparison of the total force rates with the individual AFSC rates may help to explain some of the fluctuations in the individual AFSC rates. Of course, the AFSC's being analyzed are predominately problem AFSCs during a time period when the force level has been curtailed.

People Program Data

Appendices K and M include the time series plots of people program specific data. The values for the data elements come from the Uniform Airman Reports (UARs). Initially, the loaded assignment variables (variables which receive values only when a new assignment has been loaded for the airman) were considered as key data providers for much of the econometric analysis. When the variables were finally assembled in a chronological time

series, airman specific file, it was determined that UAR observations resulted in our missing a number of sufficient to minimize the loaded assignment. Thus, the loaded assignment variables were used only to develop time series plots. The plots are not AFSC specific. The problem of missed loaded assignments tends to worsen for the AFSC's analyzed. (Refer to Appendix K for the loaded assignment plots).

As a result of the problem with the loaded assignment variables, the non-loaded assignment variables became the focus of analysis. Chapter V does not indicate any significant loss in analysis from the inability to use the loaded assignment variables, though no statistical conclusions can be drawn concerning the impact of preference expressed in Form 392. Only within the confines of the time series plots can inferences be drawn.

The figures included in Appendix L are drawn from the actual assignment data, and are more creditable in terms of data quality. Eleven Air Force programs were included in the group referred to as people programs. Table 4B presents a list of the eleven programs. Turkey Base of Preference is not among the eleven because the starting date for the program lies outside the time period analyzed, June 1981. VSBAP occurs sparingly in the data due to a late starting date, the limited number of applicable bases, and the small intersection between the AFSC's analyzed and the relevant bases. The other programs did exist the majority of the time period, with BOP and joint spouse

Table 4B

List of People Programs

Base of Preference (BOP) - First-term and Career

Project CHAP

Humanitarian

CONUS Assignment SWAP

Assignment Exchange

Overseas to Conus on Project Home - Base

Join Spouse

Non-CONUS Resident

Voluntary Stabilized Base Assignment Program (VSBAP)

Follow-on Assignment

occuring most frequently. As expected the larger AFSC's tend to capture a greater number of the programs, as well as, larger numbers within each program. AFSCs 431x1, 702x0 and 811x0 are the largest AFSCs analyzed, and tend to provide the best econometric results at each window.

The figures for Appendix L apply to the six year window and the twelve year window. The Appendix presents plots of several variables which were not included in the econometric analysis but were considered of interest in the original data set. Appendix L captures the variation in variables across the fifteen AFSCs which were analyzed, since the variation collapses to zero for several of the small AFSCs.

CHAPTER V

An Econometric Model of Retention

In this section an econometric analysis of the impact of the Air Force's "people programs" on the retention behavior of airmen is presented. The analysis utilizes data on individual airmen over the time period July 1974 to December 1979 and assumes that the probability of reenlisting depends on a vector of individual characteristics, the relative military wage, induction rate, unemployment and the force level. Furthermore, the analysis is carried out on fourteen AFSCs. Since for any individual airmen the dependent variable can assume only two values, remain in the Air Force (reenlist) or separate, a dichotomous choice model is the result (extensions have been excluded for Chapter V). This being the case, a probit model is used to analyze the data. Before presenting the econometric results, the nature of the probit model is briefly discussed.

Dichotomous Choice Models: Probit

One begins by defining a random variable, Z, which is interpreted as a measure of an individual's feeling toward reenlisting. In the dichotomous choice model, the probability, p, of an airman remaining in the Air Force is equal to the "cumulative" distribution function of the random variable Z, F(Z). If Z is assumed to be a linear function of a vector of the airman's attributes, X, then the probability of staying in the military is given by

$$p = F(Z) = F(\alpha + \beta X)$$

where α and β are the parameters to be estimated.

This problem differs from the standard econometric problem in that the variable Z cannot be observed; that is, no information on the individual airman's attitude toward reenlisting exists but only on whether he stayed in the Air Force or separated. Letting R represent a dummy variable which equals 1 if the individual stays and 0 otherwise, the probability that the representative airman stays in the military is given by

$$\Pr\{R = 1\} = F(Z)$$

and the probability that he separates by

$$\Pr\{R = 0\} = 1 - F(Z).$$

The probit model assumes that Z is a normally distributed random variable, and, thus, the probability that an airman will reenlist, given his vector of attributes, can be deduced from the standard "cumulative" normal distribution F( ) is then given by

$$p = F(Z) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Z} e^{-S^2/2}\, dS$$

The value p can be interpreted as the probability that an airman will stay in the Air Force given his vector of attributes X. At

this point, one should note that the estimated coefficients, α and β, do not have the same interpretation as in a standard econometric model. In particular, β cannot be interpreted as the change in the probability of reenlisting due to a change in X. This can be seen by differentiating p with respect to X:

$$\frac{\partial p}{\partial X} = \frac{\partial F}{\partial Z} \cdot \frac{\partial Z}{\partial X} = f(Z)\beta$$

where $f(z)$ is the standard normal density function.

Since $f(z) \geq 0$, i.e., the probability of reenlisting is always positive, the sign of $(\partial p/\partial X)$ is equal to the sign of β. The coefficient estimates will indicate the direction of change in the probability of staying, i.e., the qualitative relationship between retention and one of the independent variables such as the induction rate. If the coefficient has a negative value, then the independent variable is inversely related to reenlistment, whereas, a positive coefficient implies a direct relationship between reenlistment and the independent variable.

Once the coefficients, α and β, are estimated then a predicted value can be generated for Z. The predicted value of z is used to evaluate F(Z), which is equal to p. The predicted value of Z forms the upper limit in the integral for F(Z). The evaluation of F(z) and its resulting conditional probability will be used to assess the effect of "people programs" on the probability of reenlisting.

Empirical Results: First Term Airmen

In order to estimate the parameters of the dichotomous choice model, a maximum-likelihood estimation procedure is used. In particular, the following equation is estimated on monthly data from July 1974 to December 1979:

$$L^* = \prod_{i=1}^{n} F(Z_i)^{R_i} \left[1-F(Z_i)\right]^{1-R_i}$$

$$Z_i = \alpha + \beta_1 \text{ EDHSMOR}_i + \beta_2 \text{ RACBOTHR}_i$$
$$+ \beta_3 \text{ AFQT1-2}_i + \beta_4 \text{ DEPTANY}_i + \beta_5 \text{ NONMAR}_i$$
$$+ \beta_6 \text{ MALES}_i + \beta_7 \text{ NLPEOP2}_i + \beta_8 \text{ RML XXX}_i +$$
$$\beta_9 \text{ RINDS}_i + \beta_{10} \text{ RUM20}_i + \beta_{11} \text{ QFORL}_i + \varepsilon$$

where L* is the likelihood function and n is the number of individuals in the sample. A brief description of the variables is provided in Table 5.1 (a thorough discussion of these variables is given in Section IV).

The first seven exogenous variables are dummy variables describing the characteristics of the individual airman. Of particular interest here is the dummy variable NLPEOP2_i which takes on the value 1 if the individual has a "people program" and 0 otherwise. The next two exogenous variables, RMLXXX_i, and RUM20_i, describe the economic environment confronting the airman at the time the decision is made. RINDS_i controls for draft pressure, and the last variable, QFORL, controls for any demand side constraints affecting the individual's reenlistment decision.

Table 5.1A

Description of Variables

Abbreviation	Variable Description
EDHSMOR	Education level - high school education or more
RACBOTHR	Race - Black or other
AFQT1_2	AFQT Category - Categories 1 and 2
DEPTANY	Number of Dependents - 2 or more dependents
NONMAR	Marital Status - not married
MALES	Sex - Males
NLPEOP2	People Programs - Refer to Table 5.1B for a listing
RMLXXX	Relative Military Wage
RINDS	Induction Rate at the six-year window
RUM20	Unemployment Rate - Males 20+ years of age
CRUM2534	Unemployment Rate - Males 25 to 34 years of age (level of change)
QFORL	Quarterly Force Level
PFLXXX	Relative Military Wage at the ten-year window
PMAN	Percent Manning
NLBOP	Base of Preference Assignment
NLFOLLON	Follow-On Assignment
NLJOINSP	Join Spouse Assignment
HLHUM	Humanitarian Assignment
XXX	The 3 digit AFSC number

Table 5.1B

List of People Programs

Base of Preference (BOP) - First term and Career

Project CHAP

Humanitarian

CONUS Assignment SWAP

Assignment Exchange

Overseas to CONUS on Project Home - Base

Join Spouse

Non-CONUS Resident

Voluntary Stabilized Base Assignment Program (VSBAP)

Follow-On Assignment

During the time period analyzed, the quarterly force level, QFORL, was steadily declining, having a mean of approximately 530,000 and a standard deviation of plus or minus 55,000. The changes in force level have significant effects upon reenlistment in the Air Force, as the results to follow will demonstrate. The induction rate was relevant only in the early portion of the time, as the draft-induced enlistees of the early 1970s finally approached the first term decision. The induction rate does not appear in the second term decision, since the dominant impact of draft-induced enlistees is presumed to occur eat the first term decision. This first term presumption is supported by the probit results.

Tables 5.2-5.15 give the initial empirical results of the analysis. The dummy variables for race (RACBOTHR), dependents (DEPTANY), and marital status (NONMAR) clearly have the anticipated effect on retention behavior; that is, non-whites and individuals who are married tend to have a higher probability of staying in the Air Force. The dummy variables for education (EDHSMOR), ability (AFQT1_2), and sex (MALES) are not as strong statistically as those discussed above. This is due to the fact that in many of the AFSCs these variables take on the value of one or zero for nearly everyone in the sample. However, when significant, these variables seem to indicate that the probability of reenlisting is lower for high ability individuals, higher for males, and higher for those who have more education prior to military service.

The positive effect of education seems counter-intuitive

Table 5.2

PROBIT RESULTS-FOR FIRST TERM AIRMEN: AFSC 252 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-14.499161	1.524761	-9.509134*
EDHSMOR	-0.050151	0.474429	-0.105709
RACBOTHR	0.510697	0.395040	1.292772
AFQT1_2	-0.352658	0.189996	-1.856140*
DEPTANY	0.353833	0.200543	1.764376*
NONMAR	-0.394475	0.204633	-1.927716*
MALES	0.451934	0.204765	2.207080*
NLPEOP2	0.695542	0.369250	1.883663*
RML252	4.706992	3.678814	1.279486
RINDS	-4.818143	0.740648	-6.505312*
RUM20	0.052811	0.054666	0.966080
QFORL	24.677818	4.849471	5.088765*

NUMBER OF SUCCESSFUL PREDICTION	=	489(84 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	61.626206
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	961.686721
EFRON ADJUSTED R-SQUARE	=	0.573585
EFRON R-BAR SQUARE	=	0.565312
SQUARED CORRELATION COEFFICIENT	=	0.573780
VALUE OF LOG LIKELIHOOD	=	-197.829941
NUMBER OF OBSERVATIONS	=	579

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-9.907655	1.000000
EDHSMOR	-0.033441	0.975820
RACBOTHR	0.016876	0.048359
AFQT1_2	-0.196863	0.816926
DEPTANY	0.080177	0.331606
NONMAR	-0.121044	0.449050
MALES	0.254415	0.823834
NLPEOP2	0.024626	0.051813
RML252	1.463541	0.455023
RINDS	-0.595715	0.180938
RUM20	0.183550	5.086284
QFORL	8.958679	0.531263

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.3

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 272 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.403624	0.741191	-18.083899*
EDHSMOR	-0.049153	0.135031	-0.364010
RACBOTHR	0.462356	0.107840	4.287410*
AFQT1_2	-0.083792	0.077997	-1.074300
DEPTANY	0.198629	0.092207	2.154159*
NONMAR	-0.590419	0.095025	-6.213290*
MALES	0.043683	0.106660	0.409556
NLPEOP2	0.655649	0.121883	5.379307*
RML272	4.038817	1.167055	3.460692*
RINDS	-4.713240	0.353492	-13.333366*
RUM20	0.087582	0.030692	2.853586*
QFORL	22.970150	1.546356	14.854378*

NUMBER OF SUCCESSFUL PREDICTION	=	1464(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	239.161659
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	2331.630961
EFRON ADJUSTED R-SQUARE	=	0.468972
EFRON R-BAR SQUARE	=	0.465709
SQUARED CORRELATION COEFFICIENT	=	0.469282
VALUE OF LOG LIKELIHOOD	=	-750.294411
NUMBER OF OBSERVATIONS	=	1802

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.261802	1.000000
EDHSMOR	-0.034937	0.928413
RACBOTHR	0.047341	0.133740
AFQT1_2	-0.032040	0.499445
DEPTANY	0.053756	0.353496
NONMAR	-0.170575	0.377358
MALES	0.028897	0.864040
NLPEOP2	0.056826	0.113208
RML272	1.559878	0.504470
RINDS	-0.660059	0.182920
RUM20	0.339329	5.060623
QFORL	9.112559	0.518173

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.4

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 276 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-14.121272	1.492590	-9.460921*
EDHSMOR	0.191065	0.145430	1.313794
RACBOTHR	0.259556	0.109566	2.368939*
AFQT1_2	-0.032977	0.088329	-0.373346
DEPTANY	0.046625	0.111917	0.416604
NONMAR	-0.541584	0.114031	-4.749436*
MALES	0.218350	0.148581	1.469570
NLPEOP2	0.938543	0.163243	5.749350*
RML276	10.636795	2.285231	4.654582*
RINDS	-3.392863	0.437340	-7.757951*
RUM20	0.158080	0.039377	4.014481*
QFORL	17.944348	1.553624	11.549991*

NUMBER OF SUCCESSFUL PREDICTION	=	823(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	205.714438
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1126.346623
EFRON ADJUSTED R-SQUARE	=	0.267138
EFRON R-BAR SQUARE	=	0.259881
SQUARED CORRELATION COEFFICIENT	=	0.267161
VALUE OF LOG LIKELIHOOD	=	-611.677355
NUMBER OF OBSERVATIONS	=	1123

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-11.019194	1.000000
EDHSMOR	0.135551	0.909172
RACBOTHR	0.040760	0.201247
AFQT1_2	-0.010564	0.410508
DEPTANY	0.012052	0.331256
NONMAR	-0.186657	0.441674
MALES	0.153695	0.902048
NLPEOP2	0.065215	0.089047
RML276	3.436485	0.414026
RINDS	-0.356868	0.134792
RUM20	0.619282	5.020370
QFORL	7.131868	0.509330

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.5

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 302 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-10.978092	1.943766	-5.647847*
EDHSMOR	0.235798	0.358536	0.657667
RACBOTHR	-0.134010	0.425649	-0.314838
AFQT1_2	-0.051991	0.220670	-0.235606
DEPTANY	-0.088773	0.248060	-0.357868
NONMAR	-0.074727	0.246357	-0.303329
MALES	0.168196	0.630480	0.266774
NLPEOP2	0.637384	0.507148	1.256800
RML302	18.315729	4.448992	4.116826*
RINDS	-4.171916	1.106035	-3.771955*
RUM20	0.021480	0.072147	0.297734
QFORL	2.833357	5.303418	0.534251

NUMBER OF SUCCESSFUL PREDICTION	=	178(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	43.706199
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	236.624701
EFRON ADJUSTED R-SQUARE	=	0.265315
EFRON R-BAR SQUARE	=	0.230330
SQUARED CORRELATION COEFFICIENT	=	0.265339
VALUE OF LOG LIKELIHOOD	=	-129.142580
NUMBER OF OBSERVATIONS	=	243

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-7.003080	1.000000
EDHSMOR	0.141134	0.938272
RACBOTHR	-0.004222	0.049383
AFQT1_2	-0.025523	0.769547
DEPTANY	-0.017944	0.316872
NONMAR	-0.020990	0.440329
MALES	0.105087	0.979424
NLPEOP2	0.016732	0.041152
RML302	6.295287	0.538802
RINDS	-0.302619	0.113710
RUM20	0.069062	5.040012
QFORL	0.915319	0.506418

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.6

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 303 x 2

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-9.008462	1.193343	-7.548931*
EDHSMOR	0.184093	0.199541	0.922582
RACBOTHR	0.355323	0.276910	1.283172
AFQT1_2	0.246317	0.151061	1.630572
DEPTANY	0.396035	0.145549	2.720970*
NONMAR	-0.534989	0.148280	-3.607965*
MALES	-0.049759	0.430628	-0.115550
NLPEOP2	0.857086	0.294168	2.913589*
RML303	10.220122	2.116473	4.828847*
RINDS	-2.580950	0.721320	-3.578096*
RUM20	0.205982	0.049946	4.124086*
QFORL	4.906494	2.671439	1.836648*

NUMBER OF SUCCESSFUL PREDICTION	=	413(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	102.415624
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	548.896639
EFRON ADJUSTED R-SQUARE	=	0.275499
EFRON R-BAR SQUARE	=	0.261191
SQUARED CORRELATION COEFFICIENT	=	0.275541
VALUE OF LOG LIKELIHOOD	=	-303.402429
NUMBER OF OBSERVATIONS	=	569

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-6.410795	1.000000
EDHSMOR	0.118575	0.905097
RACBOTHR	0.012888	0.050967
AFQT1_2	0.142018	0.810193
DEPTANY	0.095596	0.339192
NONMAR	-0.158578	0.416520
MALES	-0.034602	0.977153
NLPEOP2	0.038590	0.063269
RML303	3.932077	0.540636
RINDS	-0.169064	0.092047
RUM20	0.779169	5.315463
QFORL	1.752938	0.502035

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.7

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 304 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-15.718276	1.287857	-12.204981*
EDHSMOR	0.436049	0.242565	1.797655*
RACBOTHR	0.591203	0.203047	2.911652*
AFQT1_2	0.090002	0.125171	0.719033
DEPTANY	0.108798	0.133679	0.813879
NONMAR	-0.692444	0.137694	-5.028877*
MALES	-0.367904	0.349176	-1.053634
NLPEOP2	0.738160	0.291776	2.529886*
RML304	10.840798	2.165185	5.006869*
RINDS	-3.582673	0.567656	-6.311340*
RUM20	0.135337	0.043658	3.099951*
QFORL	19.313282	2.344338	8.238266*

NUMBER OF SUCCESSFUL PREDICTION	=	643(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	119.360145
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	901.720948
EFRON ADJUSTED R-SQUARE	=	0.398095
EFRON R-BAR SQUARE	=	0.389788
SQUARED CORRELATION COEFFICIENT	=	0.398218
VALUE OF LOG LIKELIHOOD	=	-372.002070
NUMBER OF OBSERVATIONS	=	809

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.188901	1.000000
EDHSMOR	0.267981	0.948084
RACBOTHR	0.031738	0.082818
AFQT1_2	0.044856	0.768850
DEPTANY	0.026589	0.377009
NONMAR	-0.168113	0.374536
MALES	-0.233766	0.980222
NLPEOP2	0.017152	0.035847
RML304	3.828812	0.544854
RINDS	-0.333119	0.143440
RUM20	0.434932	4.957714
QFORL	6.431229	0.513707

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.8

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 306 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-15.359637	1.193045	-12.874319*
EDHSMOR	0.056284	0.314106	0.179188
RACBOTHR	0.479633	0.261534	1.833921*
AFQT1_2	0.151662	0.180600	0.839766
DEPTANY	0.006696	0.146925	0.045571
NONMAR	-0.712306	0.152501	-4.670824*
MALES	-0.126135	0.384960	-0.327658
NLPEOP2	0.556180	0.246583	2.255549*
RML306	1.088189	2.158060	0.504244
RINDS	-5.653068	0.625366	-9.039609*
RUM20	0.214344	0.050952	4.206763*
QFORL	28.895964	3.327298	8.684514*

NUMBER OF SUCCESSFUL PREDICTION	=	622(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	102.207268
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1413.623495
EFRON ADJUSTED R-SQUARE	=	0.464629
EFRON R-BAR SQUARE	=	0.456859
SQUARED CORRELATION COEFFICIENT	=	0.464636
VALUE OF LOG LIKELIHOOD	=	-313.159468
NUMBER OF OBSERVATIONS	=	770

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-9.749155	1.000000
EDHSMOR	0.034611	0.968831
RACBOTHR	0.017001	0.055844
AFQT1_2	0.084012	0.872727
DEPTANY	0.001523	0.358442
NONMAR	-0.177912	0.393506
MALES	-0.078502	0.980519
NLPEOP2	0.022465	0.063636
RML306	0.390595	0.565504
RINDS	-0.580057	0.161659
RUM20	0.700807	5.151109
QFORL	9.505536	0.518267

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.9

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 316 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-20.382507	1.447741	-14.078833*
EDHSMOR	0.354024	0.400846	0.883193
RACBOTHR	0.085682	0.249928	0.342825
AFQT1_2	-0.230542	0.150139	-1.535522
DEPTANY	0.094154	0.133854	0.703410
NONMAR	-1.459197	0.164507	-8.870128*
MALES	0.562736	0.567491	0.991620
NLPEOP2	0.927390	0.230229	4.028116*
RML316	-3.395204	2.579327	-1.316314
RINDS	-6.398069	0.637426	-10.037359*
RUM20	0.191793	0.045321	4.231845*
QFORL	44.015536	4.677756	9.409540*

NUMBER OF SUCCESSFUL PREDICTION	=	809(87 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	98.624506
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1829.026385
EFRON ADJUSTED R-SQUARE	=	0.574810
EFRON R-BAR SQUARE	=	0.569737
SQUARED CORRELATION COEFFICIENT	=	0.575776
VALUE OF LOG LIKELIHOOD	=	-330.944900
NUMBER OF OBSERVATIONS	=	934

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-12.004411	1.000000
EDHSMOR	0.204710	0.981799
RACBOTHR	0.002864	0.056745
AFQT1_2	-0.111502	0.821199
DEPTANY	0.021314	0.384368
NONMAR	-0.275120	0.320128
MALES	0.327524	0.988223
NLPEOP2	0.056724	0.103854
RML316	-1.319225	0.659735
RINDS	-0.493045	0.130844
RUM20	0.598128	5.295156
QFORL	13.198466	0.509136

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.10

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 321 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-14.129035	2.212792	-6.385161*
EDHSMOR	-0.007083	0.409751	-0.017285
RACBOTHR	0.062038	0.414954	0.149505
AFQT1_2	0.259561	0.307264	0.844749
DEPTANY	0.067129	0.243569	0.275607
NONMAR	-1.077920	0.279161	-3.861288*
MALES	1.575391	0.978905	1.609340
NLPEOP2	1.533371	0.363231	4.221470*
RML321	3.927438	4.193864	0.936473
RINDS	-5.111846	1.119303	-4.566988*
RUM20	0.223132	0.097901	2.279166*
QFORL	19.111158	5.887997	3.245783*

NUMBER OF SUCCESSFUL PREDICTION	=	211(83 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	34.325409
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	242.153002
EFRON ADJUSTED R-SQUARE	=	0.460558
EFRON R-BAR SQUARE	=	0.436139
SQUARED CORRELATION COEFFICIENT	=	0.460737
VALUE OF LOG LIKELIHOOD	=	-107.959455
NUMBER OF OBSERVATIONS	=	255

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-11.631226	1.000000
EDHSMOR	-0.005465	0.937255
RACBOTHR	0.003405	0.066667
AFQT1_2	0.186860	0.874510
DEPTANY	0.018854	0.341176
NONMAR	-0.292307	0.329412
MALES	1.281627	0.988235
NLPEOP2	0.188106	0.149020
RML321	1.835702	0.567780
RINDS	-0.545176	0.129553
RUM20	0.942658	5.131902
QFORL	7.984426	0.507509

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.11

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 328 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-12.738920	1.214147	-10.492072*
EDHSMOR	0.202098	0.245927	0.821783
RACBOTHR	0.542686	0.262811	2.064926*
AFQT1_2	0.113743	0.159267	0.714166
DEPTANY	0.213728	0.146639	1.457515
NONMAR	-0.607008	0.165704	-3.663205*
MALES	0.034139	0.419349	0.081409
NLPEOP2	1.023793	0.258826	3.955528*
RML328	2.300369	2.859031	0.804597
RINDS	-5.304520	0.607322	-8.734274*
RUM20	0.068987	0.052223	1.320997
QFORL	23.255207	3.226602	7.207337*

NUMBER OF SUCCESSFUL PREDICTION	=	589(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	99.721500
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	884.721488
EFRON ADJUSTED R-SQUARE	=	0.430519
EFRON R-BAR SQUARE	=	0.421818
SQUARED CORRELATION COEFFICIENT	=	0.430757
VALUE OF LOG LIKELIHOOD	=	-309.922694
NUMBER OF OBSERVATIONS	=	732

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-6.747174	1.000000
EDHSMOR	0.101046	0.943989
RACBOTHR	0.018848	0.065574
AFQT1_2	0.050615	0.840164
DEPTANY	0.045157	0.398907
NONMAR	-0.124297	0.386612
MALES	0.017761	0.982240
NLPEOP2	0.044447	0.081967
RML328	0.683011	0.560585
RINDS	-0.527034	0.187587
RUM20	0.185630	5.080339
QFORL	6.495911	0.527388

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.12

PROBIT RESULTS FOR FIRST TERM AIRMAN: AFSC 431 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.168164	0.322694	-40.806983*
EDHSMOR	0.206402	0.037518	5.501417*
RACBOTHR	0.342840	0.036803	9.315591*
AFQT1_2	-0.047043	0.028668	-1.640945*
DEPTANY	0.068772	0.032983	2.085038*
NONMAR	-0.914214	0.046289	-19.750261*
MALES	0.033813	0.109862	0.307779
NLPEOP2	0.918445	0.051922	17.688813*
RML431	-0.218696	0.965777	-0.226445
RINDS	-4.897077	0.140700	-34.805084*
RUM20	0.135676	0.011800	11.498281*
QFORL	26.306898	1.047005	25.125860*

NUMBER OF SUCCESSFUL PREDICTION	=	11220(82 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1818.100994
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	27001.842010
EFRON ADJUSTED R-SQUARE	=	0.456562
EFRON R-BAR SQUARE	=	0.456122
SQUARED CORRELATION COEFFICIENT	=	0.457453
VALUE OF LOG LIKELIHOOD	=	-5826.845169
NUMBER OF OBSERVATIONS	=	13603

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-8.133955	1.000000
EDHSMOR	0.109930	0.862236
RACBOTHR	0.034826	0.164449
AFQT1_2	-0.010200	0.351026
DEPTANY	0.016301	0.383739
NONMAR	-0.207402	0.367272
MALES	0.020625	0.987503
NLPEOP2	0.056720	0.099978
RML431	-0.086018	0.636752
RINDS	-0.486661	0.160884
RUM20	0.420497	5.017458
QFORL	8.450125	0.520016

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.13

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 463 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-21.421101	2.135097	-10.032846*
RACBOTHR	0.502626	0.354739	1.416888
AFQT1_2	-0.259165	0.231856	-1.117783
DEPTANY	0.258557	0.234137	1.104297
NONMAR	-0.563965	0.218746	-2.578174*
NLPEOP2	0.737353	0.360984	2.042619*
RML463	16.982768	5.639576	3.011356*
RINDS	-4.875680	1.033373	-4.718219*
RUM20	0.070164	0.092278	0.760350
QFORL	30.344309	5.004222	6.063742*

NUMBER OF SUCCESSFUL PREDICTION	=	328(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	50.064929
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	607.269345
EFRON ADJUSTED R-SQUARE	=	0.494054
EFRON R-BAR SQUARE	=	0.482526
SQUARED CORRELATION COEFFICIENT	=	0.494451
VALUE OF LOG LIKELIHOOD	=	-160.261149
NUMBER OF OBSERVATIONS	=	405

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-12.770050	1.000000
RACBOTHR	0.017756	0.059259
AFQT1_2	-0.130466	0.844444
DEPTANY	0.046812	0.303704
NONMAR	-0.153575	0.456790
NLPEOP2	0.044499	0.101235
RML463	4.161807	0.411076
RINDS	-0.303940	0.104569
RUM20	0.232793	5.565534
QFORL	9.055588	0.500597

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**EDHSMOR AND MALES NOT INCLUDED TO ELIMINATE SINGULARITY.

Table 5.14

PROBIT RESULTS FOR FIRST TERM AIRMAN: AFSC 702 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.731084	1.660890	-8.267306*
EDHSMOR	0.119719	0.041813	2.863237*
RACBOTHR	0.320060	0.030577	10.467325*
AFQT1_2	-0.060613	0.034950	-1.734278*
DEPTANY	0.195113	0.037255	5.237175*
NONMAR	-0.575437	0.100115	-5.747778*
MALES	0.164329	0.033577	4.894104*
NLPEOP2	0.709307	0.040038	17.715879*
RML702	4.817800	2.331792	2.066136*
RINDS	-3.246992	0.147022	-22.085068*
RUM20	0.049902	0.012919	3.862742*
QFORL	20.722941	0.531846	38.964171*

NUMBER OF SUCCESSFUL PREDICTION	=	8810(78 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1756.874193
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	14956.315135
EFRON ADJUSTED R-SQUARE	=	0.350869
EFRON R-BAR SQUARE	=	0.350232
SQUARED CORRELATION COEFFICIENT	=	0.351565
VALUE OF LOG LIKELIHOOD	=	-5455.436091
NUMBER OF OBSERVATIONS	=	11230

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEAN

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-7.931128	1.000000
EDHSMOR	0.060751	0.878540
RACBOTHR	0.060794	0.328851
AFQT1_2	-0.007130	0.203651
DEPTANY	0.036087	0.320214
NONMAR	-0.132062	0.397329
MALES	0.071251	0.750668
NLPEOP2	0.073950	0.180499
RML702	1.942880	0.698179
RINDS	-0.254370	0.135629
RUM20	0.145867	5.060690
QFORL	6.147465	0.513588

*SIGNIFICANT AT THE 90 PERCENTILE LEVEL, TWO-TAILED TEST

Table 5.15

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 811 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.426522	0.993702	-13.511617*
EDHSMOR	0.272824	0.046356	5.885409*
RACBOTHR	0.282259	0.040131	7.033421*
AFQT1_2	0.009105	0.041602	0.218854
DEPTANY	0.190865	0.042749	4.464812*
NONMAR	-0.910433	0.063604	-14.314189*
NLPEOP2	1.038111	0.064622	16.064368*
RML811	2.221607	0.995096	2.232555*
RINDS	-3.766708	0.195772	-19.240256*
RUM20	0.121245	0.014362	8.442150*
QFORL	22.506271	0.681062	33.045835*

NUMBER OF SUCCESSFUL PREDICTION	=	5911(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1149.872961
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	9727.944009
EFRON ADJUSTED R-SQUARE	=	0.381571
EFRON R-BAR SQUARE	=	0.380739
SQUARED CORRELATION COEFFICIENT	=	0.382178
VALUE OF LOG LIKELIHOOD	=	-3590.184191
NUMBER OF OBSERVATIONS	=	7444

EVALUATED AT THE SAMPLE MEANS
MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-9.966994	1.000000
EDHSMOR	0.169797	0.838393
RACBOTHR	0.056239	0.268404
AFQT1_2	0.001567	0.231865
DEPTANY	0.050801	0.358544
NONMAR	-0.273462	0.404621
NLPEOP2	0.083026	0.107738
RML811	1.366032	0.828310
RINDS	-0.339560	0.121438
RUM20	0.459655	5.107023
QFORL	8.458686	0.506289

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY.

since one would expect the opportunity costs of remaining in the military to be higher for those individuals with at least a high school education and, thus, the probability of staying lower. However, noting that these are first term airmen and that these AFSCs are, predominantly, technical jobs, the education dummy may be implying that individuals who have a small initial stock of human capital cannot learn to perform the task required by their skill classification and, thus, they separate.

The continuous variables in the model all have the appropriate signs. A higher relative military wage, a higher unemployment rate, and a higher force level all increase the probability of reenlisting while draft pressure reduces it. Clearly, a higher relative military wage or a higher unemployment rate in the civilian sector both represent an increase in the opportunity cost of leaving the military which would cause individuals to stay longer. A higher induction rate means a greater percentage of the individuals in the service have a high opportunity cost of staying and, thus, a higher probability of separating. The draft-induced enlistees have the effect of increasing quality in the short-run, but contributing to high attrition rates in the long run. For the time period analyzed, the increased attrition rates due to the draft-induced enlistees were mitigated by the declining force level, which warrants a higher attrition rate. Finally, a decrease in the force level reflects a decrease in the demand for airmen which, in turn, has a negative impact on the airmen's expectations of future returns to staying in the military and, thus, decreases the probability

of staying. The force level is statistically significant across all AFSCs, demonstrating the all-pervasive impact of the steadily declining force level for the time period.

The "People Programs"

Of central concern here is the impact of the "people programs" on retention. It is clear from Tables 5.2-5.15 that for each of the AFSCs considered in this study, the "people programs" dummy variable, NLPEOP2, has had a positive and significant impact on retention; in other words, increasing the probability that a first term airman receives a "people program" significantly increases the probability of that airman staying in the Air Force.

As noted earlier in the chapter, the estimated coefficient on NLPEOP2 cannot be used to calculate the increase in the probability of reenlisting as a result of that individual receiving a "people program." However, the estimated elasticities can be used to compare the relative impact of "people programs" across AFSCs. Loosely speaking, this elasticity can be interpreted as the percentage change in the probability of staying in the Air Force due to a one percent increase in the probability of getting a "people program." As can be seen from the preceeding tables, the impact of these programs on retention varies a great deal. For example, a one percent increase in the probability of getting a "people program" increases the probability of reenlisting for Bomb-Navigation System Mechanics, AFSC 321, nearly ten times that of Weather

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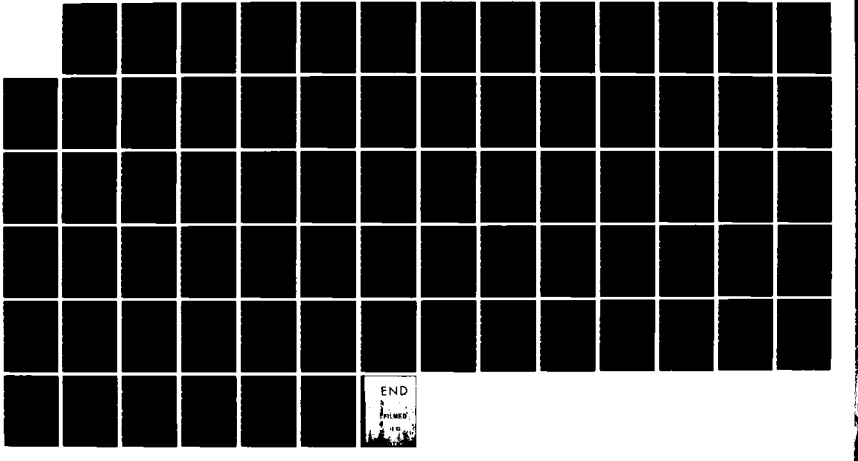

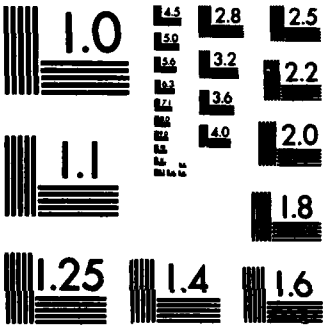

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Observers, AFSC 252. The mean of the elasticities across AFSC is statistically different from zero at the 90 percent level of significance (mean elasticity = 0.05617).

A question which warranted further analysis for the first term decision is the effect of BOP relative to all other programs included in NLPEOP2. For most of the AFSCs, BOP composed the majority of the observations captured by the "people programs" dummy variable (Refer to Table 5.16). The reason the BOP differentiation is important lies within the conditions upon which a first term airman can receive a BOP. First term airman must reenlist to receive a BOP. Thus, one would expect a significant positive relationship to be reflected by the data.

Tables 5.17-5.30 present the probit results for the same independent variables used in Tables 5.2-5.15, with the exception that NLPEOP2 has been replaced with BOP. BOP is a dummy variable, which takes a value of 1 if the airman has a BOP assignment and a value of zero otherwise. The BOP variable is positive and statistically significant across the AFSCs with the exception of 252 x 1s (Weather Observers) and 302 x 0s (Weather Equipment Specialists). It should be noted that though BOP is conditional on reenlistment, the absence of a BOP does not imply separation.

To determine if any of the other programs contributed significantly to retention, two more dummy variables were inserted into the equation: NLJOINSP and NLHUM. NLJOINSP and NLHUM take a value of one if an airman receives a join spouse assignment or an humanitarian assignment, respectively, and a

Table 5.16

NUMBER OF AIRMEN WITH BOPs

	FIRST TERM			SECOND TERM		
AFSC	NO. OF BOP	NO. OF* NLPEOP2	PERCENT*	NO. OF BOP	NO. OF NLPEOP2	PERCENT
252X1	14	30	46.7	19	29	65.5
272X0	147	204	72.1	86	123	69.9
276X0	73	100	73.0	18	40	45.0
302X0	7	10	70.0	4	5	80.0
303X2	29	36	80.6	61	77	79.2
304X0	16	29	55.2	6	15	40.0
306X0	34	49	69.4	21	34	61.8
306X0	84	97	86.6	49	51	96.1
316X0	32	38	84.2	21	23	91.3
328X0	49	60	81.7	33	40	82.5
431X1	1144	1360	84.1	717	916	78.3
463X0	33	41	80.5			
702X0	1227	2027	60.5	334	573	58.3
811X0	658	802	82.0	166	271	61.3
AVG.			73.3			69.9
STD.DEV.			12.1			16.8

*Percent equals (No. of BOP to No. of BOP) x 100.

Table 5.17

PROBIT RESULTS FOR FIRST AIRMEN: AFSC 252 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-14.428054	1.524620	-9.463378*
EDHSMOR	-0.034555	0.467451	-0.073922
RACBOTHR	0.474059	0.393383	1.205082
AFQT1_2	-0.369001	0.189595	-1.946261*
DEPTANY	0.316978	0.198815	1.594337
NONMAR	-0.463206	0.199503	-2.321802*
MALES	0.361412	0.197130	1.833366*
NLBOP	0.718830	0.496732	1.447118
RML252	4.518787	3.684650	1.226382
RINDS	-4.744444	0.743478	-6.381414*
RUM20	0.059142	0.054497	1.085228
QFORL	24.874659	4.857013	5.121390*

NUMBER OF SUCCESSFUL PREDICTION	=	490(85 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	61.757388
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	990.107511
EFRON ADJUSTED R-SQUARE	=	0.572677
EFRON R-BAR SQUARE	=	0.564387
SQUARED CORRELATION COEFFICIENT	=	0.572879
VALUE OF LOG LIKELIHOOD	=	-198.543095
NUMBER OF OBSERVATIONS	=	579

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-9.864569	1.000000
EDHSMOR	-0.023054	0.975820
RACBOTHR	0.015674	0.048359
AFQT1_2	-0.206101	0.816926
DEPTANY	0.071866	0.331606
NONMAR	-0.142213	0.449050
MALES	0.203570	0.823834
NLBOPC	0.011884	0.024180
RML252	1.405807	0.455023
RINDS	-0.586930	0.180938
RUM20	0.205668	5.086284
QFORL	9.035178	0.531263

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.18

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 272 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.397328	0.744547	-17.993928*
EDHSMOR	-0.062282	0.134985	-0.461401
RACBOTHR	0.462860	0.108172	4.278941*
AFQT1_2	-0.092920	0.078225	-1.187852
DEPTANY	0.182108	0.092321	1.972546*
NONMAR	-0.632270	0.094467	-6.693039*
MALES	-0.031819	0.106065	-0.299996
NLBOP	0.868599	0.149017	5.828873*
RML272	4.126207	1.170540	3.525046*
RINDS	-4.838204	0.358533	-13.494429*
RUM20	0.084612	0.030800	2.747150*
QFORL	23.157006	1.556264	14.879874*

NUMBER OF SUCCESSFUL PREDICTION	=	1465(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	238.852262
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	2508.849665
EFRON ADJUSTED R-SQUARE	=	0.469659
EFRON R-BAR SQUARE	=	0.466400
SQUARED CORRELATION COEFFICIENT	=	0.469919
VALUE OF LOG LIKELIHOOD	=	-747.133993
NUMBER OF OBSERVATIONS	=	1802

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.236905	1.000000
EDHSMOR	-0.044183	0.928413
RACBOTHR	0.047300	0.133740
AFQT1_2	-0.035461	0.499445
DEPTANY	0.049189	0.353496
NONMAR	-0.182309	0.377358
MALES	-0.021007	0.864040
NLBOP	0.054142	0.081576
RML272	1.590511	0.504470
RINDS	-0.676233	0.182920
RUM20	0.327179	5.060623
QFORL	9.168706	0.518173

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.19

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 276 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-14.323595	1.502818	-9.531159*
EDHSMOR	0.195128	0.145797	1.338357
RACBOTHR	0.252849	0.110049	2.297595*
AFQT1_2	-0.032053	0.088681	-0.361437
DEPTANY	0.007841	0.112493	0.069703
NONMAR	-0.586224	0.114376	-5.125421*
MALES	0.116833	0.147740	0.790804
NLBOP	1.303972	0.209425	6.226437*
RML276	10.922755	2.296238	4.756804*
RINDS	-3.490186	0.442199	-7.892794*
RUM20	0.161896	0.039609	4.087328*
QFORL	18.346427	1.569197	11.691599*

NUMBER OF SUCCESSFUL PREDICTION	=	818(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	203.981540
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1110.714003
EFRON ADJUSTED R-SQUARE	=	0.273311
EFRON R-BAR SQUARE	=	0.266116
SQUARED CORRELATION COEFFICIENT	=	0.273327
VALUE OF LOG LIKELIHOOD	=	-606.020655
NUMBER OF OBSERVATIONS	=	1123

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-11.116808	1.000000
EDHSMOR	0.137687	0.909172
RACBOTHR	0.039493	0.201247
AFQT1_2	-0.010212	0.410508
DEPTANY	0.002016	0.331256
NONMAR	-0.200953	0.441674
MALES	0.081795	0.902048
NLBOP	0.065787	0.065004
RML276	3.509844	0.414026
RINDS	-0.365126	0.134792
RUM20	0.630814	5.020370
QFORL	7.252356	0.509330

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.20

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 302 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-10.869746	1.927972	-5.637918*
EDHSMOR	0.253389	0.358675	0.706457
RACBOTHR	-0.131416	0.426103	-0.308413
AFQT1_2	-0.052646	0.220716	-0.238523
DEPTANY	-0.081701	0.248499	-0.328779
NONMAR	-0.070356	0.246633	-0.285265
MALES	-0.097674	0.607756	-0.160713
NLBOP	0.880691	0.602206	1.462442
RML302	18.373109	4.458732	4.120703*
RINDS	-4.205601	1.110557	-3.786929*
RUM20	0.021940	0.072342	0.303277
QFORL	3.039661	5.314915	0.571911

NUMBER OF SUCCESSFUL PREDICTION	=	178(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	43.538082
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	237.576663
EFRON ADJUSTED R-SQUARE	=	0.268141
EFRON R-BAR SQUARE	=	0.233291
SQUARED CORRELATION COEFFICIENT	=	0.268158
VALUE OF LOG LIKELIHOOD	=	-128.818628
NUMBER OF OBSERVATIONS	=	243

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-6.926105	1.000000
EDHSMOR	0.151491	0.938272
RACBOTHR	-0.004135	0.049383
AFQT1_2	-0.025815	0.769547
DEPTANY	-0.016496	0.316872
NONMAR	-0.019740	0.440329
MALES	-0.060957	0.979424
NLBOP	0.016165	0.028807
RML302	6.307851	0.538802
RINDS	-0.304716	0.113710
RUM20	0.070458	5.040012
QFORL	0.980853	0.506418

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.21

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 303 X 2

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-8.881305	1.188195	-7.474617*
EDHSMOR	0.191883	0.199440	0.962112
RACBOTHR	0.345486	0.276683	1.248671
AFQT1_2	0.239424	0.150456	1.591326
DEPTANY	0.374910	0.145054	2.584617*
NONMAR	-0.549807	0.147931	-3.716648*
MALES	-0.040785	0.430278	-0.094788
NLBOP	0.861150	0.341822	2.519291*
RML303	10.209507	2.115731	4.825521*
RINDS	-2.464562	0.717790	-3.433545*
RUM20	0.204060	0.049928	4.087065*
QFORL	4.691046	2.674642	1.753897*

NUMBER OF SUCCESSFUL PREDICTION	=	418(73 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	102.759731
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	550.306585
EFRON ADJUSTED R-SQUARE	=	0.273065
EFRON R-BAR SQUARE	=	0.258709
SQUARED CORRELATION COEFFICIENT	=	0.273098
VALUE OF LOG LIKELIHOOD	=	-304.541013
NUMBER OF OBSERVATIONS	=	569

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-6.321308	1.000000
EDHSMOR	0.123612	0.905097
RACBOTHR	0.012533	0.050967
AFQT1_2	0.138066	0.810193
DEPTANY	0.090511	0.339192
NONMAR	-0.162996	0.416520
MALES	-0.028366	0.977153
NLBOP	0.031239	0.050967
RML303	3.928616	0.540636
RINDS	-0.161466	0.092047
RUM20	0.772022	5.315463
QFORL	1.676231	0.502035

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.22

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 304 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-15.543854	1.279709	-12.146399*
EDHSMOR	0.421226	0.241158	1.746685*
RACBOTHR	0.590481	0.202951	2.909473*
AFQT1_2	0.077922	0.125211	0.622325
DEPTANY	0.107418	0.133694	0.803463
NONMAR	-0.702925	0.137750	-5.102923*
MALES	-0.414622	0.349753	-1.185471
NLBOP	1.048694	0.451678	2.321777*
RML304	10.571829	2.162822	4.887979*
RINDS	-3.534065	0.565369	-6.250896*
RUM20	0.136341	0.043687	3.120882*
QFORL	19.397988	2.350193	8.253785*

NUMBER OF SUCCESSFUL PREDICTION	=	643(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	119.107515
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	914.733864
EFRON ADJUSTED R-SQUARE	=	0.399369
EFRON R-BAR SQUARE	=	0.391080
SQUARED CORRELATION COEFFICIENT	=	0.399544
VALUE OF LOG LIKELIHOOD	=	-372.279772
NUMBER OF OBSERVATIONS	=	809

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.040054	1.000000
EDHSMOR	0.257952	0.948084
RACBOTHR	0.031587	0.082818
AFQT1_2	0.038697	0.768850
DEPTANY	0.026158	0.377009
NONMAR	-0.170052	0.374536
MALES	-0.262515	0.980222
NLBOP	0.013397	0.019778
RML304	3.720556	0.544854
RINDS	-0.327433	0.143440
RUM20	0.436602	4.957714
QFORL	6.436496	0.513707

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.23

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 306 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-15.397002	1.195867	-12.875178*
EDHSMOR	0.080542	0.313652	0.256788
RACBOTHR	0.473343	0.260276	1.818620*
AFQT1_2	0.149848	0.180545	0.829975
DEPTANY	0.000582	0.146957	0.003961
NONMAR	-0.714511	0.152152	-4.696021*
MALES	-0.178514	0.385470	-0.463109
NLBOP	0.728471	0.311410	2.339262*
RML306	1.253624	2.167710	0.578317
RINDS	-5.696151	0.629283	-9.051806*
RUM20	0.215458	0.051026	4.222520*
QFORL	28.868142	3.324848	8.682546*

NUMBER OF SUCCESSFUL PREDICTION	=	621(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	101.967574
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1483.845404
EFRON ADJUSTED R-SQUARE	=	0.465884
EFRON R-BAR SQUARE	=	0.458133
SQUARED CORRELATION COEFFICIENT	=	0.465896
VALUE OF LOG LIKELIHOOD	=	-312.881296
NUMBER OF OBSERVATIONS	=	770

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-9.733459	1.000000
EDHSMOR	0.049329	0.968831
RACBOTHR	0.016710	0.055844
AFQT1_2	0.082672	0.872727
DEPTANY	0.000132	0.358442
NONMAR	-0.177743	0.393506
MALES	-0.110652	0.980519
NLBOP	0.020334	0.044156
RML306	0.448161	0.565504
RINDS	-0.582120	0.161659
RUM20	0.701607	5.151109
QFORL	9.458087	0.518267

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.24

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 316 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-20.134796	1.434816	-14.033018*
EDHSMOR	0.379528	0.400991	0.946475
RACBOTHR	0.126091	0.244613	0.515470
AFQT1_2	-0.226671	0.148968	-1.521608
DEPTANY	0.126968	0.132603	0.957506
NONMAR	-1.456410	0.163518	-8.906718*
MALES	0.575339	0.566821	1.015028
NLBOP	0.712412	0.242642	2.936059*
RML316	-3.471648	2.562618	-1.354727
RINDS	-6.201648	0.621197	-9.983379*
RUM20	0.191923	0.045083	4.257151*
QFORL	43.513192	4.643610	9.370552*

NUMBER OF SUCCESSFUL PREDICTION	=	808(87 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	99.831432
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	1816.429266
EFRON ADJUSTED R-SQUARE	=	0.569607
EFRON R-BAR SQUARE	=	0.564472
SQUARED CORRELATION COEFFICIENT	=	0.570666
VALUE OF LOG LIKELIHOOD	=	-335.278159
NUMBER OF OBSERVATIONS	=	934

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-11.946281	1.000000
EDHSMOR	0.221081	0.981799
RACBOTHR	0.004245	0.056745
AFQT1_2	-0.110441	0.821199
DEPTANY	0.028955	0.384368
NONMAR	-0.276626	0.320128
MALES	0.337337	0.988223
NLBOP	0.038015	0.089936
RML316	-1.358911	0.659735
RINDS	-0.481446	0.130844
RUM20	0.602964	5.295156
QFORL	13.144397	0.509136

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.25

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 321 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-12.895908	2.103587	-6.130438*
EDHSMOR	0.001545	0.411057	0.003758
RACBOTHR	0.071984	0.418144	0.172150
AFQT1_2	0.302354	0.312182	0.968521
DEPTANY	0.032264	0.245737	0.131293
NONMAR	-1.130528	0.280892	-4.024774*
MALES	0.195603	0.855447	0.228656
NLBOP	1.792941	0.420618	4.262637*
RML321	4.265877	4.225968	1.009444
RINDS	-5.384558	1.135042	-4.743928*
RUM20	0.219701	0.098793	2.223852*
QFORL	19.093969	5.919260	3.225736*

NUMBER OF SUCCESSFUL PREDICTION	=	210(82 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	33.867599
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	242.185345
EFRON ADJUSTED R-SQUARE	=	0.467753
EFRON R-BAR SQUARE	=	0.443660
SQUARED CORRELATION COEFFICIENT	=	0.467915
VALUE OF LOG LIKELIHOOD	=	-106.566864
NUMBER OF OBSERVATIONS	=	255

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.503983	1.000000
EDHSMOR	0.001179	0.937255
RACBOTHR	0.003909	0.066667
AFQT1_2	0.215369	0.874510
DEPTANY	0.008966	0.341176
NONMAR	-0.303335	0.329412
MALES	0.157448	0.988235
NLBOP	0.183264	0.125490
RML321	1.972833	0.567780
RINDS	-0.568196	0.129553
RUM20	0.918357	5.131902
QFORL	7.892998	0.507509

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.26

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 328 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-12.740349	1.215174	-10.484380*
EDHSMOR	0.218652	0.247369	0.883911
RACBOTHR	0.529492	0.265326	1.995627*
AFQT1_2	0.139514	0.160466	0.869428
DEPTANY	0.208782	0.147418	1.416260
NONMAR	-0.633598	0.165102	-3.837608*
MALES	-0.034955	0.407749	-0.085726
NLBOP	1.340315	0.323942	4.137522*
RML328	1.847489	2.854829	0.647145
RINDS	-5.361293	0.612104	-8.758788*
RUM20	0.069068	0.052390	1.318340
QFORL	23.850896	3.232346	7.378818*

NUMBER OF SUCCESSFUL PREDICTION	=	596(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	98.842466
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	908.975554
EFRON ADJUSTED R-SQUARE	=	0.435538
EFRON R-BAR SQUARE	=	0.426915
SQUARED CORRELATION COEFFICIENT	=	0.435833
VALUE OF LOG LIKELIHOOD	=	-307.901966
NUMBER OF OBSERVATIONS	=	732

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-6.676561	1.000000
EDHSMOR	0.108166	0.943989
RACBOTHR	0.018195	0.065574
AFQT1_2	0.061426	0.840164
DEPTANY	0.043645	0.398907
NONMAR	-0.128369	0.386612
MALES	-0.017993	0.982240
NLBOP	0.047018	0.066940
RML328	0.542743	0.560585
RINDS	-0.527041	0.187587
RUM20	0.183883	5.080339
QFORL	6.591840	0.527388

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.27

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 431 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.055976	0.321323	-40.631948*
EDHSMOR	0.205387	0.037441	5.485546*
RACBOTHR	0.352737	0.036734	9.602398*
AFQT1_2	-0.045552	0.028614	-1.591940
DEPTANY	0.062906	0.032945	1.909417*
NONMAR	-0.925787	0.046184	-20.045815*
MALES	-0.025932	0.108369	-0.239290
NLBOP	0.942868	0.057224	16.476860*
RML431	-0.219963	0.964897	-0.227965
RINDS	-4.888757	0.140555	-34.781746*
RUM20	0.133892	0.011786	11.360671*
QFORL	26.254215	1.045622	25.108713*

NUMBER OF SUCCESSFUL PREDICTION	=	11207(82 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1826.106421
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	28004.646746
EFRON ADJUSTED R-SQUARE	=	0.454169
EFRON R-BAR SQUARE	=	0.453728
SQUARED CORRELATION COEFFICIENT	=	0.455081
VALUE OF LOG LIKELIHOOD	=	-5848.748190
NUMBER OF OBSERVATIONS	=	13603

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-8.067475	1.000000
EDHSMOR	0.109428	0.862236
RACBOTHR	0.035843	0.164449
AFQT1_2	-0.009880	0.351026
DEPTANY	0.014916	0.383739
NONMAR	-0.210101	0.367272
MALES	-0.015823	0.987503
NLBOP	0.048997	0.084099
RML431	-0.086546	0.636752
RINDS	-0.486004	0.160884
RUM20	0.415113	5.017458
QFORL	8.436149	0.520016

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.28

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 463 X 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-21.548647	2.143070	-10.055037*
RACBOTHR	0.477796	0.355973	1.342225
AFQT1_2	-0.286275	0.231229	-1.238060
DEPTANY	0.259466	0.234341	1.107217
NONMAR	-0.573362	0.218657	-2.622197*
NLBOP	0.910439	0.453282	2.008549*
RML463	17.593603	5.672174	3.101739*
RINDS	-4.909708	1.037744	-4.731136*
RUM20	0.071221	0.092861	0.766966
QFORL	30.166790	4.998815	6.034788*

NUMBER OF SUCCESSFUL PREDICTION	=	328(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	50.364138
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	615.916591
EFRON ADJUSTED R-SQUARE	=	0.491030
EFRON R-BAR SQUARE	=	0.479433
SQUARED CORRELATION COEFFICIENT	=	0.491343
VALUE OF LOG LIKELIHOOD	=	-160.156589
NUMBER OF OBSERVATIONS	=	405

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-12.748235	1.000000
RACBOTHR	0.016751	0.059259
AFQT1_2	-0.143016	0.844444
DEPTANY	0.046619	0.303704
NONMAR	-0.154944	0.456790
NLBOP	0.043887	0.081481
RML463	4.278657	0.411076
RINDS	-0.303730	0.104569
RUM20	0.234502	5.565534
QFORL	8.934038	0.500597

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**EDHSMOR AND MALES NOT INCLUDED TO ELIMINATE SINGULARITY.

Table 5.29

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 702 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.183404	1.666649	-7.910125*
EDHSMOR	0.110291	0.041969	2.627927*
RACBOTHR	0.319095	0.030727	10.385004*
AFQT1_2	-0.056101	0.035045	-1.600807
DEPTANY	0.140529	0.037503	3.747165*
NONMAR	-0.698583	0.100457	-6.954018*
MALES	0.044038	0.033135	1.329056
NLBOP	1.075080	0.056693	18.963223*
RML702	4.126514	2.341206	1.762559*
RINDS	-3.375848	0.148178	-22.782379*
RUM20	0.051609	0.012979	3.976242*
QFORL	20.984945	0.535103	39.216664*

NUMBER OF SUCCESSFUL PREDICTION	=	8886(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1739.971320
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	16418.623777
EFRON ADJUSTED R-SQUARE	=	0.357114
EFRON R-BAR SQUARE	=	0.356484
SQUARED CORRELATION COEFFICIENT	=	0.357886
VALUE OF LOG LIKELIHOOD	=	-5407.213159
NUMBER OF OBSERVATIONS	=	11230

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-7.501703	1.000000
EDHSMOR	0.055136	0.878540
RACBOTHR	0.059711	0.328851
AFQT1_2	-0.006501	0.203651
DEPTANY	0.025606	0.320214
NONMAR	-0.157943	0.397329
MALES	0.018811	0.750668
NLBOP	0.066786	0.109172
RML702	1.639391	0.698179
RINDS	-0.260537	0.135629
RUM20	0.148616	5.060690
QFORL	6.132742	0.513588

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.30

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 811 X 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.485139	0.992531	-13.586612*
EDHSMOR	0.274013	0.046288	5.919681*
RACBOTHR	0.276627	0.040119	6.895169*
AFQT1_2	0.011983	0.041533	0.288523
DEPTANY	0.185015	0.042708	4.332089*
NONMAR	-0.923364	0.063448	-14.553152*
NLBOP	1.128550	0.073608	15.331893*
RML811	2.251661	0.992792	2.268009*
RINDS	-3.810489	0.196162	-19.425231*
RUM20	0.119986	0.014339	8.367609*
QFORL	22.637737	0.683004	33.144373*

NUMBER OF SUCCESSFUL PREDICTION	=	5897(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1156.319069
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	8859.192876
EFRON ADJUSTED R-SQUARE	=	0.378104
EFRON R-BAR SQUARE	=	0.377267
SQUARED CORRELATION COEFFICIENT	=	0.378629
VALUE OF LOG LIKELIHOOD	=	-3599.070541
NUMBER OF OBSERVATIONS	=	7444

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.001621	1.000000
EDHSMOR	0.170386	0.838393
RACBOTHR	0.055068	0.268404
AFQT1_2	0.002061	0.231865
DEPTANY	0.049200	0.358544
NONMAR	-0.277100	0.404621
NLBOP	0.073425	0.087722
RML811	1.383282	0.828310
RINDS	-0.343202	0.121438
RUM20	0.454479	5.107023
QFORL	8.500543	0.506289

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY

value of zero otherwise. Neither the join spouse assignment nor the humanitarian assignment are conditional on reenlistment. The expanded equation was estimated for three of the AFSCs: 431 x 1, 702 x 0, and 811 x 0. As Table 5.16 suggests, the reduced number of AFSCs used was prompted by the absolute small number of people receiving the aforementioned programs in many of the AFSCs, thus minimizing the problem of singularity during the iteration process of the probit analyses.

Tables 5.31-5.33 present supporting evidence for the positive effect of "people programs" on first term retention. The join spouse dummy variable is statistically significant in two of the three cases and the humanitarian dummy variable is statistically significant in all three cases. The significance of NLJOINSP and NLHUM lends support to the hypothesis that "people programs" enhance retention for the first term decision maker, and not solely the conditional reenlistment of the BOP assignment.

Further discussion of the impact of the "people programs" on the probability of reenlisting can be provided with a discussion of several ways of measuring this impact in addition to the elasticity estimates. As is shown in Figure 5.1, the sample population, N, can be divided into two disjoint sets. The first set of individuals, N_1, are those who have received a "people programs," while the second, N_2, are those who did not. Within each of these sets the members can be further divided according to whether they remained in the Air Force, S_1 and S_2, or separated, F_1 and F_2. Now, let the probability of an airman

Table 5.31

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 431 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.131341	0.322454	-40.723154*
EDHSMOR	0.205948	0.037475	5.495598*
RACBOTHR	0.349136	0.036764	9.496681*
AFQT1_2	-0.046920	0.028635	-1.638563
DEPTANY	0.067288	0.033002	2.038885*
NONMAR	-0.915540	0.046277	-19.784026*
MALES	0.013778	0.109780	0.125509
NLBOP	0.949604	0.057264	16.582904*
NLJOINSP	0.604643	0.190629	3.171839*
NLHUM	0.456395	0.216383	2.109194*
RML431	-0.165069	0.965126	-0.171034
RINDS	-4.895835	0.140659	-34.806462*
RUM20	0.134019	0.011790	11.366792*
QFORL	26.238127	1.045859	25.087644*

NUMBER OF SUCCESSFUL PREDICTION	=	11205(82 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1823.140013
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	27966.657287
EFRON ADJUSTED R-SQUARE	=	0.455056
EFRON R-BAR SQUARE	=	0.454535
SQUARED CORRELATION COEFFICIENT	=	0.455964
VALUE OF LOG LIKELIHOOD	=	-5841.128863
NUMBER OF OBSERVATIONS	=	13603

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-8.113523	1.000000
EDHSMOR	0.109720	0.862236
RACBOTHR	0.035475	0.164449
AFQT1_2	-0.010177	0.351026
DEPTANY	0.015954	0.383739
NONMAR	-0.207762	0.367272
MALES	0.008407	0.987503
NLBOP	0.049344	0.084099
NLJOINSP	0.001813	0.004852
NLHUM	0.001099	0.003896
RML431	-0.064943	0.636752
RINDS	-0.486677	0.160884
RUM20	0.415481	5.017458
QFORL	8.430438	0.520016

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.32

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 702 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.266608	1.667092	-7.957936*
EDHSMOR	0.114517	0.042014	2.725677*
RACBOTHR	0.318484	0.030762	10.353199*
AFQT1_2	-0.056357	0.035081	-1.606493
DEPTANY	0.154551	0.037880	4.080050*
NONMAR	-0.667611	0.100938	-6.614069*
MALES	0.075552	0.034855	2.167611*
NLBOP	1.087780	0.056809	19.147985*
NLJOINSP	0.193196	0.065581	2.945914*
NLHUM	0.353036	0.202043	1.747333*
RML702	4.168740	2.341633	1.780271*
RINDS	-3.365523	0.148219	-22.706452*
RUM20	0.050774	0.012987	3.909611*
QFORL	20.983114	0.535312	39.197948*

NUMBER OF SUCCESSFUL PREDICTION	=	8905(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1737.818666
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	16431.559010
EFRON ADJUSTED R-SQUARE	=	0.357909
EFRON R-BAR SQUARE	=	0.357165
SQUARED CORRELATION COEFFICIENT	=	0.358666
VALUE OF LOG LIKELIHOOD	=	-5401.363013
NUMBER OF OBSERVATIONS	=	11230

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-7.550405	1.000000
EDHSMOR	0.057259	0.878540
RACBOTHR	0.059607	0.328851
AFQT1_2	-0.006532	0.203651
DEPTANY	0.028166	0.320214
NONMAR	-0.150968	0.397329
MALES	0.032278	0.750668
NLBOP	0.067587	0.109172
NLJOINSP	0.005757	0.052360
NLHUM	0.001073	0.005343
RML702	1.656465	0.698179
RINDS	-0.259787	0.135629
RUM20	0.146238	5.060690
QFORL	6.133309	0.513588

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.33

PROBIT RESULTS FOR FIRST TERM AIRMEN: AFSC 811 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-13.504019	0.993121	-13.597551*
EDHSMOR	0.272438	0.046317	5.881975*
RACBOTHR	0.277567	0.040144	6.914223*
AFQT1_2	0.011868	0.041568	0.285499
DEPTANY	0.187295	0.042805	4.375561*
NONMAR	-0.914637	0.063570	-14.387900*
NLBOP	1.136066	0.073642	15.426811*
NLJOINSP	0.369102	0.249318	1.480447
NLHUM	0.564132	0.195935	2.879179*
RML811	2.270036	0.993206	2.285563*
RINDS	-3.811643	0.196434	-19.404222*
RUM20	0.119222	0.014352	8.306788*
QFORL	22.632954	0.683463	33.115129*

NUMBER OF SUCCESSFUL PREDICTION	=	5909(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1153.613616
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	8905.994275
EFRON ADJUSTED R-SQUARE	=	0.379559
EFRON R-BAR SQUARE	=	0.378557
SQUARED CORRELATION COEFFICIENT	=	0.380098
VALUE OF LOG LIKELIHOOD	=	-3593.587561
NUMBER OF OBSERVATIONS	=	7444

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-10.014626	1.000000
EDHSMOR	0.169390	0.838393
RACBOTHR	0.055250	0.268404
AFQT1_2	0.002041	0.231865
DEPTANY	0.049801	0.358544
NONMAR	-0.274454	0.404621
NLBOP	0.073906	0.087722
NLJOINSP	0.001324	0.004836
NLHUM	0.003372	0.008060
RML811	1.394432	0.828310
RINDS	-0.343272	0.121438
RUM20	0.451539	5.107023
QFORL	8.497900	0.506289

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

PARTITION OF THE SAMPLE

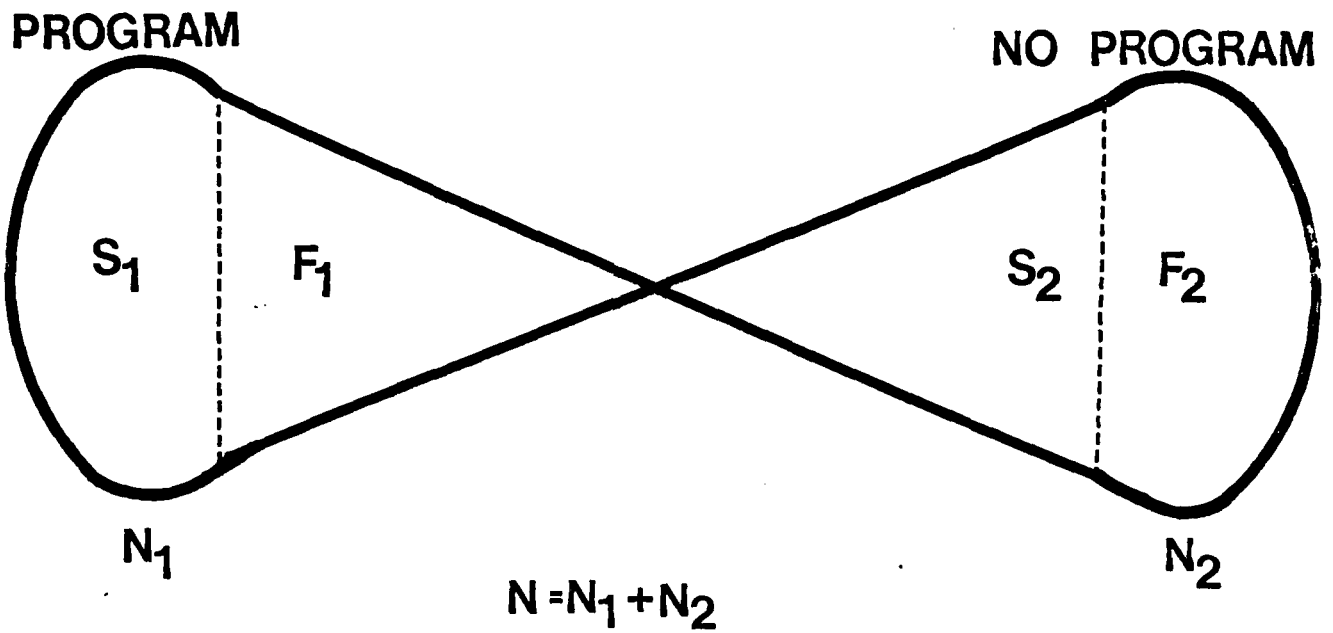

FIGURE 5.1

reenlisting if he receives a "people program" (NLPEOP2 = 1) be given by R_1; then, the probability of this airman separating is $(1-R_1)$. Likewise, let this probability of a reenlistment or separation if the airman does not receive a "people program" (NLPEOP2 = 0) be given by R_2 and $(1-R_2)$ respectively. Given these probabilities, the following relations can be deduced:

$$(1) \quad S_1 = R_1N_1,\ S_2 = R_2N_2$$

$$(2) \quad S_1^* = R_2N_1,\ S_2^* = R_1N_2$$

where S_1 and S_2 are the actual number of men who reenlisted if they received or did not receive a "people program" respectively, S_1* is the number of airmen who would reenlist if the "people programs" were eliminated, and S_2* is the number who would reenlist if everyone received a "people program."

Equations (1) and (2) can now be used to calculate several measures of the impact of "people programs" on reenlistments. The first summary measure, PR_1, is simply the difference in the probabilities of reenlisting with and without the "people programs;" that is

$$(3) \quad PR_1 = (R_1 - R_2) = (S_2^* - S_2)/N_2.$$

In words, PR_1 measures the percentage increase in the reenlistments of those individuals with no "people programs" if the Air Force gave "people programs" to them. One problem with

PR_1 is that it is an average measure of the change in the probability of staying and, thus, comparisons across different cohorts can be misleading. For example, if non-whites tend to have a higher probability of reenlisting than whites, R_1 and R_2 may be close to one which makes their difference necessarily small even though the marginal impact of the "people programs" may be large. To remedy this defficiency, several additional statistics are also calculated which measure the marginal impact on reenlistments.

The second and third statistics, PR_2 and PR_3, measure the increase in total reenlistments due to the "people programs" as a percentage of the number of airmen who separated and did not receive a "people program", F_2, and the total number who separated, $F_1 + F_2$, respectively. That is,

$$(4) \quad PR_2 = \frac{(S_1 + S_2^*) - (S_1 + S_2)}{F_2} = \frac{(R_1 - R_2)N_2}{F_2} = \frac{(R_1 - R_2)}{(1 - R_2)}$$

$$(5) \quad PR_3 = \frac{(S_1 + S_2^*) - (S_1 + S_2)}{F_1 + F_2} = \frac{(R_1 - R_2)N_2}{F_1 + F_2}$$

where $(S_1 + S_2^*)$ is the number of reenlistments if everyone received a "people program" and $(S_1 + S_2)$ the number of current reenlistments. Thus, the numerator in each of the expressions is simply the increase in reenlistments.

Summary statistics, PR_4 and PR_5, capture the impact on retention of eliminating "people programs". PR_4 and PR_5 measure the decrease in total reenlistments with the elimination of

"people programs" as a percentage of the number of airmen who reenlisted and received a "people program", S_1, and the total number of airmen who reenlisted, $S_1 + S_2$, respectively. PR_4 and PR_5 can be expressed as

$$(6) \quad PR_4 = \frac{(S_1 + S_2) - (S_1^* + S_2)}{S_1} = \frac{(R_1 - R_2)N_1}{S_1} = \frac{(R_1 - R_2)}{R_1}$$

$$(7) \quad PR_5 = \frac{(S_1 + S_2) - (S_1^* + S_2)}{S_1 + S_2} = \frac{(R_1 - R_2)N_1}{S_1 + S_2}$$

where $(S_1^* + S_2)$ is the number of reenlistments if "people programs" were not available. Thus, the numerator in each of the expressions is the decline in the number of reenlistments due to the elimination of "people programs."

Two other summary measures are also computed to provide additional means of comparing results across AFSCs, as well as across selected cases of airmen characteristics.One of the two final summary measures, PR_6, is simply the change in the continuation rate; that is, the change in the probability of staying in the Air Force due to the "people programs."

$$(8) \quad PR_6 = \frac{(S_1 + S_2^*) - (S_1 + S_2)}{N} = \frac{(R_1 - R_2)}{N} N_2.$$

To highlight the difference between PR_6 and PR_1, PR_1 is the increase in the probability of reenlisting if an airman is given a people program, in contrast to PR_6, which is the change in the continuation rate for the AFSC. PR_7 is the change in the

continuation rate fostered by the elimination of "people programs". Thus, PR_7 can be expressed as

$$(9) \qquad PR_7 = \frac{(S_1 + S_2) - (S_1^* + S_2)}{N} = \frac{(R_1 - R_2)N_1}{N} .$$

Thus, PR_6 and PR_7 reflect the impact on continuation rates of giving "people programs" to all airmen versus totally eliminating the "people programs."

Tables 5.34-5.39 provide estimates of the impact of the "people programs" on the probability of reenlisting. The tables present R_1 and R_2, the summary estimates, and the absolute quantitative effects of "people programs", EXP1 and EXP2. EXP1 estimates the number of airmen who would reenlist if all airmen who did not receive a "people program" were given a "people program", while EXP2 provides an estimate of the number of airmen who would not reenlist if "people programs" were eliminated. Each of the predicted probabilities, R_1 and R_2, is calculated with the use of the estimated coefficients and by setting all continuous variables (RMLXXX, RINDS, RUM20, QFORL) equal to their sample means. The dummy variables are set equal to zero or one depending on the type of airman under consideration.

For example, Table 5.34 analyzes an airman who is a married, white, AFQT 1 or 2, male with no dependents and has an academic education level of high school or more. Thus, NONMAR = 0, RACBOTHR = 0, AFQT 1_2 = 1, MALES = 1, DEPTANY = 0, and EDHSMOR = 1. The values given the dummy variables in conjunction with the means of the continuous variables are used to evaluate the

Table 5.34

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
WHITE
AFQT 1'S AND 2'S
MARRIED
NO DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT *
252X1	0.814	0.579	0.236	0.559	0.465	0.290	0.023	0.223	0.012	57	27	579
272X0	0.753	0.511	0.242	0.495	0.478	0.321	0.024	0.229	0.013	161	108	1802
276X0	0.858	0.554	0.305	0.683	0.602	0.355	0.030	0.289	0.016	148	75	1123
302X0	0.829	0.622	0.206	0.546	0.408	0.248	0.021	0.196	0.011	23	8	243
303X2	0.859	0.586	0.273	0.659	0.538	0.318	0.027	0.258	0.014	71	29	569
304X0	0.878	0.665	0.213	0.635	0.421	0.243	0.021	0.202	0.011	86	24	809
306X0	0.855	0.693	0.163	0.529	0.321	0.191	0.016	0.154	0.008	58	17	770
316X0	0.943	0.743	0.200	0.778	0.395	0.212	0.020	0.190	0.010	95	22	934
321X0	0.950	0.544	0.406	0.890	0.801	0.427	0.040	0.385	0.021	47	24	255
328X0	0.939	0.699	0.240	0.797	0.474	0.256	0.024	0.228	0.012	99	20	732
431X1	0.916	0.677	0.239	0.739	0.472	0.261	0.024	0.227	0.012	1678	458	13603
463X0	0.866	0.645	0.221	0.623	0.437	0.255	0.022	0.210	0.011	44	13	405
702X0	0.780	0.525	0.255	0.537	0.504	0.327	0.025	0.242	0.013	1328	551	11230
811X0	0.901	0.599	0.302	0.754	0.596	0.335	0.030	0.286	0.016	1043	436	7444
AVG.	0.867	0.617	0.250	0.653	0.494	0.288	0.025	0.237	0.013			14
WGT. AVG.	0.863	0.607	0.255	0.650	0.504	0.265	0.025	0.242	0.013	4968	1796	40498

*TOT is the total number of airmen included in the analysis from each AFSC and in total.

Table 5.35

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
BLACK
AFQT 1'S AND 2'S
MARRIED
NO DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.920	0.761	0.159	0.665	0.277	0.173	0.037	0.141	0.018	44	10	579
272X0	0.874	0.688	0.186	0.596	0.324	0.213	0.043	0.165	0.021	144	53	1802
276X0	0.909	0.653	0.255	0.737	0.445	0.281	0.059	0.226	0.029	132	49	1123
302X0	0.792	0.570	0.222	0.517	0.387	0.278	0.051	0.197	0.025	24	9	243
303X2	0.924	0.717	0.207	0.731	0.361	0.224	0.048	0.183	0.023	58	15	569
304X0	0.960	0.845	0.115	0.744	0.201	0.120	0.027	0.102	0.013	50	6	809
306X0	0.938	0.837	0.101	0.620	0.176	0.108	0.023	0.089	0.011	39	5	770
316X0	0.952	0.770	0.182	0.792	0.318	0.191	0.042	0.162	0.021	87	18	934
321X0	0.956	0.569	0.387	0.898	0.676	0.404	0.089	0.344	0.044	45	22	255
328X0	0.982	0.856	0.125	0.872	0.219	0.127	0.029	0.111	0.014	54	5	732
431X1	0.957	0.789	0.169	0.798	0.294	0.177	0.039	0.150	0.019	1238	211	13603
463X0	0.946	0.809	0.137	0.720	0.240	0.145	0.032	0.122	0.016	30	4	405
702X0	0.862	0.649	0.214	0.608	0.373	0.248	0.049	0.190	0.024	1231	341	11230
811X0	0.942	0.703	0.239	0.805	0.416	0.254	0.055	0.212	0.027	861	255	7444
AVG.	0.923	0.730	0.193	0.713	0.336	0.209	0.044	0.171	0.022			14
WGT. AVG.	0.921	0.725	0.196	0.713	0.342	0.212	0.045	0.174	0.022	4077	967	40498

Table 5.36

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
WHITE
AFQT 1'S AND 2'S
NOT MARRIED
NO DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.691	0.422	0.269	0.466	0.497	0.389	0.047	0.245	0.024	55	43	579
272X0	0.537	0.287	0.250	0.351	0.462	0.466	0.044	0.228	0.022	119	163	1802
276X0	0.703	0.342	0.361	0.548	0.666	0.514	0.063	0.328	0.032	144	131	1123
302X0	0.809	0.593	0.215	0.530	0.398	0.266	0.038	0.196	0.019	24	9	243
303X2	0.705	0.376	0.330	0.528	0.609	0.468	0.058	0.300	0.029	71	53	569
304X0	0.681	0.394	0.287	0.473	0.529	0.421	0.050	0.261	0.026	89	60	809
306X0	0.636	0.417	0.219	0.375	0.404	0.344	0.038	0.199	0.019	58	44	770
316X0	0.548	0.210	0.338	0.428	0.624	0.617	0.059	0.308	0.030	93	114	934
321X0	0.714	0.167	0.548	0.657	1.011	0.768	0.096	0.499	0.049	47	60	255
328X0	0.826	0.466	0.360	0.674	0.665	0.436	0.063	0.328	0.032	131	55	732
431X1	0.678	0.324	0.354	0.524	0.654	0.522	0.062	0.322	0.032	1840	1419	13603
463X0	0.707	0.424	0.283	0.492	0.523	0.400	0.050	0.258	0.025	46	28	405
702X0	0.577	0.304	0.274	0.393	0.506	0.475	0.048	0.249	0.024	1056	867	11230
811X0	0.648	0.255	0.393	0.527	0.725	0.606	0.069	0.358	0.035	975	1056	7444
AVG.	0.676	0.356	0.320	0.497	0.591	0.473	0.056	0.291	0.028			14
WGT. AVG.	0.640	0.312	0.328	0.477	0.606	0.513	0.058	0.299	0.029	4741	4053	40498

Table 5.37

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
WHITE
AFQT 1'S AND 2'S
MARRIED
DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.894	0.710	0.184	0.635	0.413	0.206	0.013	0.177	0.008	49	14	579
272X0	0.811	0.590	0.222	0.540	0.496	0.274	0.016	0.212	0.009	159	83	1802
276X0	0.869	0.572	0.297	0.693	0.665	0.342	0.021	0.284	0.012	146	70	1123
302X0	0.805	0.588	0.217	0.527	0.486	0.270	0.016	0.208	0.009	24	9	243
303X2	0.929	0.730	0.199	0.738	0.446	0.214	0.014	0.191	0.008	56	14	569
304X0	0.898	0.703	0.195	0.657	0.437	0.217	0.014	0.187	0.008	80	20	809
306X0	0.857	0.695	0.162	0.531	0.362	0.189	0.012	0.155	0.007	58	17	770
316X0	0.953	0.772	0.181	0.793	0.405	0.190	0.013	0.173	0.007	86	17	934
321X0	0.956	0.571	0.386	0.899	0.865	0.404	0.028	0.370	0.016	45	22	255
328X0	0.961	0.769	0.192	0.830	0.430	0.200	0.014	0.184	0.008	81	12	732
431X1	0.926	0.701	0.225	0.752	0.504	0.243	0.016	0.216	0.009	1596	399	13603
463X0	0.914	0.645	0.269	0.759	0.603	0.294	0.019	0.258	0.011	57	16	405
702X0	0.833	0.601	0.232	0.581	0.519	0.279	0.017	0.222	0.010	1288	420	11230
811X0	0.931	0.671	0.260	0.789	0.582	0.279	0.019	0.249	0.011	926	308	7444
AVG.	0.896	0.666	0.230	0.688	0.515	0.257	0.017	0.221	0.009			14
WGT. AVG.	0.893	0.661	0.232	0.684	0.520	0.260	0.017	0.222	0.010	4674	1412	40498

Table 5.38

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
WHITE
AFQT 3'S AND BELOW
MARRIED
NO DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.894	0.709	0.184	0.635	0.375	0.206	0.022	0.173	0.012	49	14	579
272X0	0.779	0.545	0.234	0.514	0.476	0.300	0.027	0.219	0.015	161	97	1802
276X0	0.866	0.567	0.299	0.690	0.608	0.345	0.035	0.280	0.019	147	71	1123
302X0	0.841	0.642	0.200	0.558	0.406	0.238	0.023	0.187	0.013	23	7	243
303X2	0.796	0.489	0.308	0.602	0.626	0.387	0.036	0.288	0.019	75	41	569
304X0	0.858	0.631	0.227	0.616	0.462	0.265	0.027	0.213	0.014	89	29	809
306X0	0.818	0.638	0.180	0.498	0.367	0.220	0.021	0.169	0.011	62	22	770
316X0	0.965	0.811	0.154	0.814	0.312	0.160	0.018	0.144	0.010	74	12	934
321X0	0.917	0.441	0.476	0.851	0.969	0.519	0.056	0.446	0.030	53	35	255
328X0	0.924	0.658	0.266	0.777	0.541	0.288	0.031	0.249	0.017	108	26	732
431X1	0.923	0.693	0.229	0.748	0.466	0.248	0.027	0.215	0.015	1622	417	13603
463X0	0.948	0.736	0.212	0.803	0.431	0.224	0.025	0.199	0.013	46	9	405
702X0	0.797	0.549	0.248	0.551	0.506	0.311	0.029	0.233	0.016	1323	510	11230
811X0	0.900	0.596	0.304	0.752	0.618	0.338	0.036	0.285	0.019	1048	443	7444
AVG.	0.873	0.622	0.252	0.665	0.512	0.289	0.029	0.236	0.016			14
WGT. AVG.	0.871	0.621	0.250	0.660	0.509	0.287	0.029	0.234	0.016	4915	1699	40498

Table 5.39

CONDITIONAL PROBABILITIES FOR:

MALES
HIGH SCHOOL OR MORE
WHITE
AFQT 3'S AND BELOW
NOT MARRIED
NO DEPENDENTS

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.803	0.562	0.241	0.550	0.540	0.300	0.015	0.232	0.009	58	29	579
272X0	0.570	0.316	0.254	0.372	0.570	0.446	0.016	0.245	0.009	128	159	1802
276X0	0.714	0.354	0.360	0.557	0.806	0.504	0.023	0.347	0.013	146	128	1123
302X0	0.823	0.613	0.209	0.541	0.469	0.254	0.013	0.202	0.007	23	8	243
303X2	0.616	0.287	0.329	0.461	0.737	0.534	0.021	0.317	0.012	62	61	569
304X0	0.648	0.360	0.288	0.450	0.645	0.444	0.018	0.278	0.010	86	64	809
306X0	0.578	0.359	0.218	0.341	0.489	0.377	0.014	0.210	0.008	52	48	770
316X0	0.637	0.282	0.355	0.494	0.796	0.557	0.022	0.342	0.013	114	109	934
321X0	0.620	0.110	0.511	0.574	1.144	0.824	0.032	0.492	0.018	38	60	255
328X0	0.795	0.421	0.374	0.646	0.839	0.297	0.024	0.361	0.013	131	62	732
431X1	0.695	0.341	0.354	0.537	0.792	0.509	0.022	0.341	0.013	1883	1381	13603
463X0	0.707	0.527	0.180	0.381	0.405	0.255	0.011	0.174	0.006	29	14	405
702X0	0.601	0.325	0.276	0.409	0.618	0.459	0.017	0.266	0.010	1107	847	11230
811X0	0.644	0.252	0.392	0.525	0.879	0.609	0.025	0.378	0.014	969	1059	7444
AVG.	0.675	0.365	0.310	0.488	0.695	0.459	0.020	0.299	0.011			14
WGT. AVG.	0.653	0.325	0.328	0.486	0.735	0.502	0.021	0.316	0.012	4829	3968	40498

estimated equation. As stated previously the evaluation of the estimation equation provides an estimate of the variable z (the measure of an individual's feeling toward reenlisting), which is used as the upper limit in the integral of the standard cumulative normal distribution, F(z). The calculation of F(z) produces the probability that the airman will reenlist, given his vector of attributes as defined by the values of the independent variables.

Tables 5.34-5.39 present six possible sets of attributes which the airman can have in conjunction with the mean values of the continuous variables. Case 1 (Table 5.34) for example is for an airman who is a high school graduate or more, white, has an AFQT category 1 or 2, and is a married male with no dependents. The heading for each table provides a description of the case analyzed. Thus, comparisons can be made across cases, across AFSCs within cases, and across AFSCs, across cases, each providing some slightly different insight. As Tables 5.34-5.39 indicate, the impact of "people programs" does vary across AFSCs and cohorts. For each case, a simple average (AVG.) and weighted average (WGT.AVG.) have been calculated across the AFSCs. The weighted average is accounting for differences in the size of individual AFSCs, though the differences between the simple and weighted averages are insignificant. The averages assist in the across cohort comparisons.

Of the six cases presented, "people programs" enhance the probability of reenlisting the most for Case 3 and its variant, Case 6. Together, Case 3 and 6 have the largest ratios in six of

the seven summary statistics. The only exception is PR_2, which is dominated by Case 2 (married, AFQT 1 or 2, black, males with high school or better and no dependents). The average probability of reenlisting for Case 3 or 6 increases 0.328 with the addition of a "people program," while, at the same time, Case 2 experiences only a 0.196 rise. The bias for Case 2 should be recognized, since the probability of reenlisting without a "people program" is on average the highest of all six cases. Case 1 and 2 tend to suggest that married, male, AFQT 1 or 2, airmen with high school or better education and no dependents have strong probabilities of reenlisting without "people programs", and as Case 4 suggests, children improve this probability. Single airmen tend to be effected more by the "people programs", as exhibited by Case 3 and Case 6.

Using Case 3 as a basis, "people programs" differ across AFSCs, but the standard deviation of PR_1 is significantly smaller than its mean (mean = 0.356, standard deviation = 0.111). AFSC 321 x 0 is impacted most by the addition of a "people program", though its R_2 value is the lowest across all AFSCs. The smallest impact is experienced in AFSC 302 x 0, which is concommitant with the highest R_2 value (the simple correlation between R_2 and PR_1 across AFSCs is - 0.659).

Tables 5.34 - 5.39 present conditional probabilities for airmen with a particular set of attributes. These estimates allow comparisons of the impact of "people programs" between cohorts of airmen. Another interesting comparison would be strictly between AFSCs, accounting for the distribution of airmen

attributes during the time period analyzed. To compute the conditional probability of "people programs" for a particular AFSC, the sample mean for the airmen's attributes are assigned to the attribute's representative variable. For example, the variable EDHSMOR for AFSC 702 x 0 is assigned the value 0.878540, which is the sample mean for the variable. Likewise, RACBOTHR would be given a value of 0.328851 in the same AFSC. All six attributes are assigned their respective sample means: EDHSMOR, RACBOTHR, AFQT1_2, DEPTANY, NONMAR, and MALES. The equation is then evaluated with NLPEOP2 taking a value of 1 and 0, which is used to compute the conditional probabilities R_1 and R_2, respectively.

Table 5.40 presents the results for each of the AFSC's, as well as a simple average and a weighted average (adjusted for the size of the AFSC). Once again, the difference between the simple and weighted averages is minimal. R_1 and R_2, PR_1 through PR_7, EXP1 and EXP2, and TOT carry the same meanings as in Tables 5.34 - 5.39. To provide some insight as to the variability of the summary statistics across AFSC's, a standard deviation and the ratio of the simple average to the standard deviation is computed. The variability of R_1 and R_2 across AFSC's is small, with R_1 having a high of 0.919 (AFSC 328 x 0) and a low 0.737 (AFSC 272 x 0), and R_2 having a high of 0.647 (AFSC 328 x 0) and a low of 0.491 (AFSC 272 x 0 and AFSC 811 x 0).

The contribution of "people programs", PR_1 has a higher degree of variability than R_1 and R_2, though minimal. "People programs", on average, increase the probability of reenlisting by

Table 5.40

CONDITIONAL PROBABILITES BY AFSC

AFSC	R1	R2	PR1	PR2	PR3	PR4	PR5	PR6	PR7	EXP1	EXP2	TOT
252X1	0.801	0.560	0.241	0.548	0.026	0.301	0.024	0.229	0.013	58	30	579
272X0	0.737	0.491	0.246	0.483	0.055	0.334	0.057	0.218	0.028	160	114	1802
276X0	0.811	0.478	0.333	0.639	0.060	0.411	0.059	0.304	0.030	154	97	1123
302X0	0.809	0.594	0.215	0.530	0.021	0.266	0.015	0.206	0.009	24	9	243
303X2	0.827	0.534	0.293	0.629	0.040	0.354	0.034	0.275	0.019	74	36	569
304X0	0.831	0.587	0.244	0.591	0.020	0.294	0.015	0.235	0.009	93	35	809
306X0	0.785	0.593	0.192	0.473	0.027	0.246	0.022	0.181	0.012	63	27	770
316X0	0.881	0.600	0.281	0.703	0.064	0.319	0.054	0.252	0.029	125	48	934
321X0	0.897	0.394	0.503	0.830	0.144	0.560	0.157	0.428	0.075	55	40	255
328X0	0.919	0.647	0.272	0.772	0.056	0.296	0.037	0.250	0.022	111	28	732
431X1	0.870	0.582	0.288	0.689	0.066	0.331	0.051	0.259	0.029	1920	714	13603
463X1	0.841	0.604	0.237	0.600	0.057	0.283	0.042	0.214	0.024	47	16	405
702X0	0.830	0.596	0.234	0.578	0.104	0.282	0.071	0.191	0.042	1295	429	11230
811X0	0.845	0.491	0.354	0.695	0.079	0.419	0.074	0.316	0.038	1147	651	7444
AVG.	0.835	0.554	0.281	0.626	0.058	0.335	0.051	0.254	0.027	5328	2276	40498
WGT.AVG.	0.843	0.562	0.281	0.641	0.076	0.333	0.060	0.248	0.033			
STD.DEV. OF AVG.	0.047	0.068	0.077	0.104	0.034	0.082	0.036	0.064	0.017			
AVG. TO STD.DEV.	17.766	8.147	3.649	6.019	1.706	4.085	1.417	3.969	1.588			

50 percent, a sizeable contribution. The largest impact occurs in AFSC 321 x 0, while the smallest effect arises in AFSC 306 x 0. The numerical impact of providing "people programs" to all airmen versus eliminating "people programs" to all airmen, EXP1, and EXP2, respectively, effects a total of 5328 and 2276 airmen, respectively, across all AFSC's analyzed. The cost of providing "people programs" to all airmen may be prohibitively high in terms of operating costs of the programs as well as the implicit cost imposed upon the assignment system from inflexibility. At the same time, the cost of eliminating "people programs" may also be prohibitively high in terms of lost reenlistments. EXP2 suggests that approximately 5.6 percent of all airmen analyzed would not have reenlisted if the "people programs" they received had not been available. The 5.6 percent reduction must be compared with the operating costs of the "people programs" and the reduced flexibility in the assignment system.

Goodness of Fit

Tables 5.2-5.33 also provide several measures of how well the estimates fit the data. Three of the measures presented--Sum of Squares of Residuals, Sum of Squares of Residuals Weighted by Estimated Probabilities, and the Value of Log Likelihood--are not constrained to lie in the zero-one interval and are difficult to interpret (for a thorough discussion of the statistical measures of goodness of fit see Amemiya 1981). The three measures which are analogous to $\bar{R}^2$ of a standard regression analysis are Efron's Adjusted R-square, Efron's R-Bar Square, and the Squared

Correlation Coefficient. The theoretical difference between these measures is subtle and, as is clear from the results, they yield nearly identical estimates of the goodness of fit.

In the equations, R^2 varies from .26 in AFSC 302 to .58 in ASC 316. These values for R^2 seem excellent for the cross-section/time-series analysis; however, since this is the first study using this estimation technique on this type of data, a probit analysis on pooled time-series/cross-section data, there is no standard by which the R^2 statistics can be judged. This being the case, a statistic was calculated which reflects how well the retention behavior of the sample analyzed can be predicted using the estimated coefficients of the analysis. This statistic is called the Number of Successful Prediction in Tables 5.2-5.15. Clearly, this summary statistic suggests that the estimated equations fits the data quite well. In the worst AFSC the behavior of 73% of the airmen in the sample can be accurately predicted.

Empirical Results: Second Term Airmen

The estimating equation for second term airmen is essentially the same as that for first termers; however, a few modifications were necessary. The following equation is estimated:

$$L^* = \prod_{i=1}^{n} F(Z_i)^{R_i} [1-F(Z_i)]^{1-R_i}$$

$$Z_i = \alpha + \beta_1 \text{EDHSMOR}_i + \beta_2 \text{RACBOTHR}_i$$

$$+ \beta_3 \text{AFQT12}_i + \beta_4 \text{DEPTANY}_i + \beta_5 \text{NON MAR}_i$$

$$+ \beta_6 \text{MALES}_i + \beta_7 \text{NLPEOPZ}_i + \beta_8 \text{PFL}_i +$$

$$\beta_9 \text{RGI} + \beta_{10} \text{RUM2534} + \beta_{11} \text{PMAN} + \varepsilon.$$

These variables are discussed in detail in Chapter IV; however, a brief discussion of the differences between this equation and the one used for first termers is provided.

First, the military wage variable, PFL, is constructed differently. In particular, PFL is an attempt to capture the fact that second term airmen have a good idea of what their basic pay will be over the next fiscal year and that the majority of these men receive only a regular reenlistment bonus which is endogenous to the system. To accomplish this, PFL is the sum of basic pay lead twelve months and an estimated bonus divided by the appropriate civilian wage.

Second, the induction rate variable has been dropped since second termers are ten years removed from D.O.E. and have added the G. I. Bill, RGI, for the same reason. Finally, the change in the unemployment rate, CRUM2534, and a manning requirement variable, PMAN, which reflects changes in force level requirements have been inserted. Both of these variables support the data better for second termers.

Tables 5.41-5.53 give the empirical results of the analysis (AFSC 463 x 0 did not converge and, thus, is not reported). In general, the results are not as strong as for first term airmen. When significant, all dummy variables, except NLPEOP2, yield the same implications as they did for first term airmen. Again, the continuous variables have the expected signs in most cases; that is, a higher millitary wage, lower G.I. Bill payments, a higher increase in the unemployment rate, and a larger percent manning, all lead to an increase in the probability of staying in the military. However, it is quite clear that the people programs have no significant impact on retention. In these equations, the overbearing factor is the military to civilian wage, PFL.

A significant difference exists between the "people program" dummy variable for first termers versus second termers. As with first termers, the major component of NLPEOP2 for second termers is BOP (on average, composing 69.9 percent of NLPEOP2), but the second term BOP is <u>not</u> conditional on reenlistment. Of course, the airman must have enough time remaining in his term, as well as fulfilling all other requirements, to obtain a BOP assignment,

Table 5.41

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 252 x 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	2.096300	1.304317	1.607202
EDHSMOR	-0.435631	0.642375	-0.678157
RACBOTHR	0.465306	0.180816	2.573362*
AFQT1_2	-0.305327	0.211787	-1.441671
DEPTANY	-0.024726	0.198178	-0.124768
NONMAR	-0.651324	0.299648	-2.173631*
MALES	0.746997	0.416045	1.795471
NLPEOP2	-0.313005	0.280750	-1.114886
PFL252	5.656316	0.639301	8.847654*
RGI	-15.541433	7.314918	-2.124622*
CRUM2534	-0.081834	0.065539	-1.248630
PMAN	-1.617559	0.361685	-4.472286*

NUMBER OF SUCCESSFUL PREDICTION	=	286(74 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	61.481521
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	356.172215
EFRON ADJUSTED R-SQUARE	=	0.323433
EFRON R-BAR SQUARE	=	0.303480
SQUARED CORRELATION COEFFICIENT	=	0.323552
VALUE OF LOG LIKELIHOOD	=	-182.903395
NUMBER OF OBSERVATIONS	=	385

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	1.213230	1.000000
EDHSMOR	-0.246882	0.979221
RACBOTHR	0.074843	0.277922
AFQT1_2	-0.146415	0.828571
DEPTANY	-0.008995	0.628571
NONMAR	-0.076370	0.202597
MALES	0.416602	0.963636
NLPEOP2	-0.013645	0.075325
PFL252	1.256518	0.383836
RGI	-1.376382	0.153024
CRUM2534	-0.003080	0.065038
PMAN	-0.875852	0.935580

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.42

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 272 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.382997	0.910077	-2.618457*
EDHSMOR	0.073586	0.292798	0.251320
RACBOTHR	0.895348	0.118050	7.584479*
AFQT1_2	0.007189	0.097837	0.073481
DEPTANY	0.239484	0.119536	2.003442*
NONMAR	-0.487611	0.208220	-2.341812*
MALES	0.037828	0.329270	0.114883
NLPEOP2	0.085830	0.131467	0.652861
PFL272	2.082121	0.404646	5.145534*
RGI	-3.795926	4.564508	-0.831618
CRUM2534	0.046106	0.045743	1.007928
PMAN	1.755211	0.658351	2.666069*

NUMBER OF SUCCESSFUL PREDICTION	=	529(65 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	162.282015
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	794.890606
EFRON ADJUSTED R-SQUARE	=	0.193759
EFRON R-BAR SQUARE	=	0.182660
SQUARED CORRELATION COEFFICIENT	=	0.193787
VALUE OF LOG LIKELIHOOD	=	-469.156333
NUMBER OF OBSERVATIONS	=	811

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-1.808797	1.000000
EDHSMOR	0.054271	0.971640
RACBOTHR	0.172625	0.254007
AFQT1_2	0.003095	0.567201
DEPTANY	0.121933	0.670777
NONMAR	-0.057503	0.155364
MALES	0.028076	0.977805
NLPEOP2	0.009881	0.151665
PFL272	0.674367	0.426701
RGI	-0.495803	0.172078
CRUM2534	0.000564	0.016123
PMAN	1.344102	1.008873

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.43

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 276 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.201479	1.374898	-1.601195
EDHSMOR	-0.011214	0.350746	-0.031972
RACBOTHR	0.595390	0.140530	4.236736*
AFQT1_2	0.165757	0.132329	1.252612
DEPTANY	-0.042993	0.166857	-0.257663
NONMAR	-0.522354	0.254811	-2.049971*
MALES	1.050381	0.535911	1.959993*
NLPEOP2	0.346596	0.268243	1.292099
PFL276	2.521384	0.719923	3.502296*
RGI	-4.176080	7.213475	-0.578928
CRUM2534	0.004436	0.063866	0.069462
PMAN	1.345863	0.599392	2.245379*

NUMBER OF SUCCESSFUL PREDICTION	=	406(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	80.583998
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	511.917972
EFRON ADJUSTED R-SQUARE	=	0.146019
EFRON R-BAR SQUARE	=	0.127156
SQUARED CORRELATION COEFFICIENT	=	0.146048
VALUE OF LOG LIKELIHOOD	=	-249.982765
NUMBER OF OBSERVATIONS	=	510

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.860391	1.000000
EDHSMOR	-0.004237	0.966667
RACBOTHR	0.100377	0.431373
AFQT1_2	0.028961	0.447059
DEPTANY	-0.011004	0.654902
NONMAR	-0.034825	0.170588
MALES	0.404880	0.986275
NLPEOP2	0.010624	0.078431
PFL276	0.394454	0.400291
RGI	-0.248155	0.152045
CRUM2534	-0.000025	-0.014269
PMAN	0.511189	0.971849

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.44

PROBIT RESULTS FOR SECOND TERM AIRMAN: AFSC 302 X 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.412452	2.857796	-0.844166
EDHSMOR	2.015270	0.877572	2.296415*
RACBOTHR	2.862919	1.056023	2.711038*
AFQT1_2	0.141936	0.423511	0.335141
DEPTANY	-0.377781	0.428838	-0.880939
NONMAR	0.361400	0.828656	0.436128
NLPEOP2	-0.039481	0.798483	-0.049445
PFL302	6.679505	1.566053	4.265184*
RGI	-20.260116	13.879744	-1.459689
CRUM2534	0.030029	0.141398	0.212371
PMAN	1.806050	1.333812	1.354051

NUMBER OF SUCCESSFUL PREDICTION	=	116(85 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	14.974827
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	117.352067
EFRON ADJUSTED R-SQUARE	=	0.444014
EFRON R-BAR SQUARE	=	0.399535
SQUARED CORRELATION COEFFICIENT	=	0.444240
VALUE OF LOG LIKELIHOOD	=	-47.831096
NUMBER OF OBSERVATIONS	=	136

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.767457	1.000000
EDHSMOR	0.612820	0.955882
RACBOTHR	0.174116	0.191176
AFQT1_2	0.040173	0.889706
DEPTANY	-0.080415	0.669118
NONMAR	0.021980	0.191176
NLPEOP2	-0.000462	0.036765
PFL302	1.025732	0.482719
RGI	-1.265082	0.196282
CRUM2534	0.001620	0.169556
PMAN	0.529687	0.921922

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

Table 5.45

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 303 x 2

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	2.401425	1.526996	1.572647
EDHSMOR	0.671374	0.390579	1.718918*
RACBOTHR	1.002259	0.175237	5.719451*
AFQT1_2	-0.105096	0.239294	-0.439194
DEPTANY	0.314003	0.195536	1.605856
NONMAR	-0.878456	0.329742	-2.664071*
NLPEOP2	-0.389390	0.208112	-1.871065*
PFL303	2.172482	0.612954	3.544283*
RGI	-20.110372	7.766061	-2.589520*
CRUM2534	0.068471	0.086423	0.792274
PMAN	0.491849	0.375741	1.309012

NUMBER OF SUCCESSFUL PREDICTION	=	414(87 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	45.719672
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	476.719478
EFRON ADJUSTED R-SQUARE	=	0.205559
EFRON R-BAR SQUARE	=	0.188437
SQUARED CORRELATION COEFFICIENT	=	0.206065
VALUE OF LOG LIKELIHOOD	=	-153.653838
NUMBER OF OBSERVATIONS	=	475

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	0.440316	1.000000
EDHSMOR	0.117917	0.957895
RACBOTHR	0.126898	0.690526
AFQT1_2	-0.016714	0.867368
DEPTANY	0.040726	0.707368
NONMAR	-0.024754	0.153684
NLPEOP2	-0.011574	0.162105
PFL303	0.198227	0.497635
RGI	-0.716853	0.194408
CRUM2534	0.000258	0.020531
PMAN	0.088102	0.976916

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

Table 5.46

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 304 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-1.078229	1.833586	-0.588044
EDHSMOR	-0.576590	0.928850	-0.620757
RACBOTHR	1.566469	0.314982	4.973193*
AFQT1_2	0.379026	0.265389	1.428193
DEPTANY	0.159319	0.244962	0.650382
NONMAR	-0.427509	0.407918	-1.048027
NLPEOP2	-0.213968	0.422872	-0.505988
PFL304	2.315809	0.727920	3.181408*
RGI	0.546097	8.327192	0.065580
CRUM2534	0.249788	0.096300	2.593849*
PMAN	0.401550	0.580911	0.691242

NUMBER OF SUCCESSFUL PREDICTION	=	229(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	41.330548
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	282.471559
EFRON ADJUSTED R-SQUARE	=	0.246524
EFRON R-BAR SQUARE	=	0.219125
SQUARED CORRELATION COEFFICIENT	=	0.246638
VALUE OF LOG LIKELIHOOD	=	-126.500780
NUMBER OF OBSERVATIONS	=	286

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.365711	1.000000
EDHSMOR	-0.190780	0.975524
RACBOTHR	0.157907	0.297203
AFQT1_2	0.113274	0.881119
DEPTANY	0.039300	0.727273
NONMAR	-0.022308	0.153846
NLPEOP2	-0.003806	0.052448
PFL304	0.394326	0.502025
RGI	0.036552	0.197342
CRUM2534	0.003856	0.045512
PMAN	0.131694	0.966937

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY.

Table 5.47

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 306 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-5.528769	1.254395	-4.407520*
EDHSMOR	1.605316	0.508135	3.159233*
RACBOTHR	1.492242	0.207961	7.175587*
AFQT1_2	0.163558	0.203935	0.802008
DEPTANY	0.031883	0.164061	0.194336
NONMAR	-0.625438	0.260257	-2.403155*
NLPEOP2	-0.383897	0.245632	-1.562892
PFL306	2.617852	0.490702	5.334915*
RGI	1.225434	5.192874	0.235984
CRUM2534	0.059212	0.057949	1.021795
PMAN	2.343425	0.531473	4.409304*

NUMBER OF SUCCESSFUL PREDICTION	=	442(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	78.354303
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	685.157026
EFRON ADJUSTED R-SQUARE	=	0.407629
EFRON R-BAR SQUARE	=	0.396878
SQUARED CORRELATION COEFFICIENT	=	0.408128
VALUE OF LOG LIKELIHOOD	=	-246.260964
NUMBER OF OBSERVATIONS	=	562

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-3.628762	1.000000
EDHSMOR	1.038638	0.985765
RACBOTHR	0.226556	0.231317
AFQT1_2	0.094170	0.877224
DEPTANY	0.013069	0.624555
NONMAR	-0.081078	0.197509
NLPEOP2	-0.015244	0.060498
PFL306	0.813501	0.473459
RGI	0.158922	0.197589
CRUM2534	0.004690	0.120689
PMAN	1.527754	0.993281

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY.

Table 5.48

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 316 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.522276	1.535241	-0.340192
RACBOTHR	1.101186	0.280147	3.930743*
AFQT1_2	0.463631	0.279166	1.660771*
DEPTANY	0.188854	0.183933	1.026753
NONMAR	-0.370208	0.354216	-1.045146
NLPEOP2	-0.631915	0.208634	-3.028816*
PFL316	2.323425	0.534636	4.345804*
RGI	-7.173558	6.497901	-1.103981
CRUM2534	0.045852	0.074660	0.614143
PMAN	0.578399	0.596044	0.970397

NUMBER OF SUCCESSFUL PREDICTION	=	194(72 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	52.436606
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	300.989557
EFRON ADJUSTED R-SQUARE	=	0.199869
EFRON R-BAR SQUARE	=	0.172279
SQUARED CORRELATION COEFFICIENT	=	0.200600
VALUE OF LOG LIKELIHOOD	=	-156.060432
NUMBER OF OBSERVATIONS	=	271

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.340741	1.000000
RACBOTHR	0.108692	0.151292
AFQT1_2	0.273460	0.904059
DEPTANY	0.084566	0.686347
NONMAR	-0.030303	0.125461
NLPEOP2	-0.077586	0.188192
PFL316	0.853840	0.563280
RGI	-1.085856	0.232014
CRUM2534	0.002617	0.087493
PMAN	0.367017	0.972601

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**EDHSMOR AND MALES EXCLUDED TO ELIMINATE SINGULARITY

Table 5.49

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 321 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	3.239032	2.948229	1.098636
RACBOTHR	0.785293	0.448138	1.752347*
AFQT1_2	-0.792302	0.727778	-1.088659
DEPTANY	0.338620	0.351328	0.963828
NONMAR	-0.447725	0.719924	-0.621905
NLPEOP2	0.643684	0.410289	1.568855
PFL321	4.899765	1.290580	3.796562*
RGI	-24.659858	14.953593	-1.649092
CRUM2534	0.159160	0.155154	1.025818
PMAN	0.375672	0.801763	0.468557

NUMBER OF SUCCESSFUL PREDICTION	=	94(85 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	13.679097
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	103.086262
EFRON ADJUSTED R-SQUARE	=	0.311034
EFRON R-BAR SQUARE	=	0.249028
SQUARED CORRELATION COEFFICIENT	=	0.311123
VALUE OF LOG LIKELIHOOD	=	-43.836540
NUMBER OF OBSERVATIONS	=	110

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	1.006260	1.000000
RACBOTHR	0.068754	0.281818
AFQT1_2	-0.219290	0.890909
DEPTANY	0.068857	0.654545
NONMAR	-0.021496	0.154545
NLPEOP2	0.041812	0.209091
PFL321	0.753078	0.494732
RGI	-1.523622	0.198880
CRUM2534	0.004622	0.093473
PMAN	0.112800	0.966504

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**EDHSMOR AND MALES EXCLUDED TO ELIMINATE SINGULARITY.

Table 5.50

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 328 x 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.689008	1.539592	-0.447526
EDHSMOR	-0.584083	0.565185	-1.033437
RACBOTHR	1.158131	0.174131	6.650912*
AFQT1_2	0.114108	0.207677	0.549451
DEPTANY	0.039233	0.171208	0.229154
NONMAR	-0.824434	0.297554	-2.770706*
NLPEOP2	-0.272639	0.235353	-1.158424
PFL328	2.944606	0.520542	5.656805*
RGI	-11.276051	6.551029	-1.721264*
CRUM2534	0.081462	0.067976	1.198389
PMAN	2.396431	0.731926	3.274144*

NUMBER OF SUCCESSFUL PREDICTION	=	408(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	69.849256
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	539.167107
EFRON ADJUSTED R-SQUARE	=	0.306120
EFRON R-BAR SQUARE	=	0.292045
SQUARED CORRELATION COEFFICIENT	=	0.306521
VALUE OF LOG LIKELIHOOD	=	-219.325326
NUMBER OF OBSERVATIONS	=	504

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.278651	1.000000
EDHSMOR	-0.230592	0.976190
RACBOTHR	0.174711	0.373016
AFQT1_2	0.041020	0.888889
DEPTANY	0.010704	0.674603
NONMAR	-0.054908	0.164683
NLPEOP2	-0.008751	0.079365
PFL328	0.574139	0.482119
RGI	-0.893849	0.196007
CRUM2534	0.002407	0.073071
PMAN	0.953524	0.983854

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

Table 5.51

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 431 x 1

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.344197	0.333037	-1.033507
EDHSMOR	0.018108	0.063400	0.285613
RACBOTHR	0.560258	0.041521	13.493349*
AFQT1_2	0.050915	0.035362	1.439835
DEPTANY	0.167790	0.040549	4.137915*
NONMAR	-0.535510	0.071570	-7.482307*
NLPEOP2	0.028873	0.051109	0.564930
PFL431	2.913144	0.130874	22.259117*
RGI	-9.439751	1.237882	-7.625725*
CRUM2534	0.032953	0.015902	2.072271*
PMAN	1.220649	0.216470	5.638886*

NUMBER OF SUCCESSFUL PREDICTION	=	5948(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1176.318089
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	7490.679410
EFRON ADJUSTED R-SQUARE	=	0.208542
EFRON R-BAR SQUARE	=	0.207489
SQUARED CORRELATION COEFFICIENT	=	0.208598
VALUE OF LOG LIKELIHOOD	=	-3634.881745
NUMBER OF OBSERVATIONS	=	7528

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.150101	1.000000
EDHSMOR	0.007269	0.920563
RACBOTHR	0.069162	0.283077
AFQT1_2	0.008052	0.362646
DEPTANY	0.050553	0.690887
NONMAR	-0.031797	0.136158
NLPEOP2	0.001532	0.121679
PFL431	0.755848	0.594971
RGI	-0.964552	0.234309
CRUM2534	0.000488	0.033947
PMAN	0.536167	1.007238

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

Table 5.52

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 702 x 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.283249	0.439853	-5.190932*
EDHSMOR	0.084962	0.087056	0.975946
RACBOTHR	0.338310	0.047909	7.061528*
AFQT1_2	0.004164	0.054591	0.076268
DEPTANY	0.174431	0.054246	3.215562*
NONMAR	-0.205178	0.089361	-2.296055*
MALES	0.291763	0.099778	2.924121*
NLPEOP2	-0.063719	0.064930	-0.981354
PFL702	2.215090	0.155955	14.203362*
RGI	-2.840019	1.368066	-2.075937*
CRUM2534	-0.008401	0.020710	-0.405658
PMAN	1.657881	0.388204	4.270638*

NUMBER OF SUCCESSFUL PREDICTION	=	3563(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	670.905413
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	4565.764732
EFRON ADJUSTED R-SQUARE	=	0.181563
EFRON R-BAR SQUARE	=	0.179529
SQUARED CORRELATION COEFFICIENT	=	0.181564
VALUE OF LOG LIKELIHOOD	=	-2109.416281
NUMBER OF OBSERVATIONS	=	4438

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1)
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.915395	1.000000
EDHSMOR	0.031799	0.933529
RACBOTHR	0.054217	0.399730
AFQT1_2	0.000354	0.212032
DEPTANY	0.044594	0.637675
NONMAR	-0.013234	0.160883
MALES	0.111254	0.951104
NLPEOP2	-0.003298	0.129112
PFL702	0.632237	0.711923
RGI	-0.313892	0.275679
CRUM2534	0.000017	-0.004963
PMAN	0.661700	0.995525

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.

Table 5.53

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 811

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-1.021911	0.449200	-2.274957*
EDHSMOR	0.104345	0.109733	0.950899
RACBOTHR	0.568484	0.063329	8.976673*
AFQT1_2	0.071299	0.071147	1.002127
DEPTANY	0.137329	0.072788	1.886714*
NONMAR	-0.490238	0.126246	-3.883205*
NLPEOP2	-0.034621	0.091612	-0.377908
PFL811	1.509943	0.162663	9.282620*
RGI	-4.018732	1.557046	-2.580998*
CRUM2534	0.082108	0.028410	2.890099*
PMAN	1.301692	0.257352	5.058014*

NUMBER OF SUCCESSFUL PREDICTION	=	1771(77 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	383.465579
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	2288.948999
EFRON ADJUSTED R-SQUARE	=	0.161689
EFRON R-BAR SQUARE	=	0.158008
SQUARED CORRELATION COEFFICIENT	=	0.161706
VALUE OF LOG LIKELIHOOD	=	-1172.055697
NUMBER OF OBSERVATIONS	=	2288

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.452577	1.000000
EDHSMOR	0.042576	0.921329
RACBOTHR	0.112018	0.444930
AFQT1_2	0.007535	0.238636
DEPTANY	0.042132	0.692745
NONMAR	-0.028183	0.129808
NLPEOP2	-0.001816	0.118444
PFL811	0.556167	0.831697
RGI	-0.577811	0.324651
CRUM2534	0.000106	0.002912
PMAN	0.580542	1.007038

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST.
**MALES EXCLUDED TO ELIMINATE SINGULARITY.

but the lack of the conditional reenlistment causes a significant difference in the effect of BOP on retention. On average, the percent of NLPEOP2 which BOP composes has fallen in the second term from 73.2 to 69.9 percent (Refer to Table 5.16).

Tables 5.54-5.66 present the probit results for equations using the dummy variable BOP in place of NLPEOP2. BOP is statistically significant in only three AFSCs: 316 x 0, 321 x 0, and 702 x 0. In two of the three statistically significant cases, the BOP dummy variable is inversely related to the reenlistment decision: 316 x 0 and 702 x 0. In eleven of the thirteen AFSCs, the BOP dummy variable is negatively related to the reenlistment decision. Though the evidence is inconclusive, due to the number of insignificant coefficients, it could be hypothesized that airmen may be using the BOP as either a means of obtaining the optimal job market location for separation and entry into the private sector or obtaining a location closer to home and home's relevant job market.

Tables 5.67-5.69 attempt to determine whether the reenlistment relationship observed for the BOP is consistent with the impact of other programs, included in NLPEOP2. Once again, specific programs are used: follow-on assignment (NLFOLON), join spouse (NLJOINSP), and humanitarian (NLHUM). Each is a zero-one dummy variable, as in the first term equations. The evidence suggests that "people programs" do not significantly effect retention for second term decision makers. The coefficients for NLFOLON, NLJOINSP, and NLHUM are insignificant for all three AFSCs: 431 x 1, 702 x 0, and 811 x 0. The NL FOLON is positive

Table 5.54

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 252 X 1

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	2.135223	1.277931	1.670844*
EDHSMOR	-0.467454	0.640062	-0.730326
RACBOTHR	0.474428	0.181630	2.612056*
AFQT1_2	-0.295427	0.210964	-1.400363
DEPTANY	-0.041447	0.200117	-0.207115
NONMAR	-0.678317	0.297541	-2.279742*
MALES	0.843338	0.414195	2.036090*
NLBOP	-0.401381	0.333509	-1.203508
PFL252	5.725923	0.641558	8.925028*
RGI	-16.302845	7.116907	-2.290721*
CRUM2534	-0.084756	0.065459	-1.294791
PMAN	-1.615419	0.359852	-4.489126*

NUMBER OF SUCCESSFUL PREDICTION	=	288(75 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	61.526810
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	349.800854
EFRON ADJUSTED R-SQUARE	=	0.322934
EFRON R-BAR SQUARE	=	0.302967
SQUARED CORRELATION COEFFICIENT	=	0.323113
VALUE OF LOG LIKELIHOOD	=	-182.459098
NUMBER OF OBSERVATIONS	=	385

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	1.234890	1.000000
EDHSMOR	-0.264731	0.979221
RACBOTHR	0.076257	0.277922
AFQT1_2	-0.141568	0.828571
DEPTANY	-0.015067	0.628571
NONMAR	-0.079479	0.202597
MALES	0.470002	0.963636
NLBOP	-0.011456	0.049351
PFL252	1.271089	0.383836
RGI	-1.442802	0.153024
CRUM2534	-0.003188	0.065038
PMAN	-0.880097	0.942020

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.55

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 272 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.505012	0.921345	-2.718864*
EDHSMOR	0.070059	0.292973	0.239131
RACBOTHR	0.893719	0.117949	7.577137*
AFQT1_2	0.013889	0.097862	0.141929
DEPTANY	0.233550	0.119302	1.957636*
NONMAR	-0.500220	0.207985	-2.405076*
MALES	0.024820	0.327234	0.075847
NLBOP	-0.105320	0.149958	-0.702330
PFL272	2.081277	0.405455	5.133191*
RGI	-3.878859	4.558877	-0.850837
CRUM2534	0.042805	0.045696	0.936739
PMAN	1.921272	0.664491	2.891346*

NUMBER OF SUCCESSFUL PREDICTION	=	536(66 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	161.984018
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	803.537528
EFRON ADJUSTED R-SQUARE	=	0.195240
EFRON R-BAR SQUARE	=	0.184161
SQUARED CORRELATION COEFFICIENT	=	0.195262
VALUE OF LOG LIKELIHOOD	=	-468.390659
NUMBER OF OBSERVATIONS	=	811

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-1.905753	1.000000
EDHSMOR	0.051788	0.971640
RACBOTHR	0.172705	0.254007
AFQT1_2	0.005993	0.567201
DEPTANY	0.119183	0.670777
NONMAR	-0.059124	0.155364
MALES	0.018463	0.977805
NLBOP	-0.008497	0.106042
PFL272	0.675633	0.426701
RGI	-0.507792	0.172078
CRUM2534	0.000525	0.016123
PMAN	1.481678	1.013697

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.56

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 276 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.383310	1.352605	-1.762015*
EDHSMOR	-0.017066	0.351085	-0.048608
RACBOTHR	0.606719	0.141606	4.284552*
AFQT1_2	0.180717	0.132729	1.361545
DEPTANY	-0.041298	0.166476	-0.248073
NONMAR	-0.580896	0.254743	-2.280320*
MALES	1.020262	0.541033	1.885765*
NLBOP	0.397532	0.408347	0.973515
PFL276	2.521396	0.714878	3.527029*
RGI	-5.381829	7.082780	-0.759847
CRUM2534	-0.000937	0.063767	-0.014696
PMAN	1.757711	0.659136	2.666690*

NUMBER OF SUCCESSFUL PREDICTION	=	406(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	79.984728
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	514.530866
EFRON ADJUSTED R-SQUARE	=	0.152370
EFRON R-BAR SQUARE	=	0.133647
SQUARED CORRELATION COEFFICIENT	=	0.152426
VALUE OF LOG LIKELIHOOD	=	-248.661569
NUMBER OF OBSERVATIONS	=	510

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.935461	1.000000
EDHSMOR	-0.006475	0.966667
RACBOTHR	0.102727	0.431373
AFQT1_2	0.031711	0.447059
DEPTANY	-0.010615	0.654902
NONMAR	-0.038895	0.170588
MALES	0.394961	0.986275
NLBOP	0.005507	0.035294
PFL276	0.396153	0.400291
RGI	-0.321179	0.152045
CRUM2534	0.000005	-0.014269
PMAN	0.673184	0.975755

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.57

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 302 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.412550	2.857505	-0.844286
EDHSMOR	2.015156	0.877721	2.295896*
RACBOTHR	2.862733	1.056371	2.709970*
AFQT1_2	0.141956	0.423508	0.335192
DEPTANY	-0.377756	0.428836	-0.880886
NONMAR	0.361422	0.828607	0.436180
NLBOP	-0.040140	0.799326	-0.050218
PFL302	6.679305	1.566311	4.264355*
RGI	-20.258010	13.880623	-1.459445
CRUM2534	0.030017	0.141398	0.212288
PMAN	1.805926	1.333848	1.353921

NUMBER OF SUCCESSFUL PREDICTION	=	116(85 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	14.974813
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	117.349336
EFRON ADJUSTED R-SQUARE	=	0.444015
EFRON R-BAR SQUARE	=	0.399536
SQUARED CORRELATION COEFFICIENT	=	0.444241
VALUE OF LOG LIKELIHOOD	=	-47.831057
NUMBER OF OBSERVATIONS	=	136

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.767233	1.000000
EDHSMOR	0.612582	0.955882
RACBOTHR	0.174047	0.191176
AFQT1_2	0.040165	0.889706
DEPTANY	-0.080383	0.669118
NONMAR	0.021974	0.191176
NLBOP	-0.000375	0.029412
PFL302	1.025360	0.482719
RGI	-1.264530	0.196282
CRUM2534	0.001619	0.169556
PMAN	0.529474	0.921922

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.58

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 303 X 2

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	2.374533	1.482394	1.601824
EDHSMOR	0.621739	0.391478	1.588182
RACBOTHR	1.035868	0.177636	5.831412*
AFQT1_2	-0.102714	0.240148	-0.427711
DEPTANY	0.341587	0.195587	1.746468*
NONMAR	-0.862137	0.327061	-2.636014*
NLBOP	-0.343160	0.234236	-1.465020
PFL303	2.136308	0.605158	3.530165*
RGI	-20.970126	7.585158	-2.764626*
CRUM2534	0.053617	0.086709	0.618349
PMAN	0.684781	0.387115	1.768933*

NUMBER OF SUCCESSFUL PREDICTION	=	416(88 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	45.299404
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	494.837931
EFRON ADJUSTED R-SQUARE	=	0.212862
EFRON R-BAR SQUARE	=	0.195897
SQUARED CORRELATION COEFFICIENT	=	0.213685
VALUE OF LOG LIKELIHOOD	=	-153.517035
NUMBER OF OBSERVATIONS	=	475

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	0.442598	1.000000
EDHSMOR	0.111009	0.957895
RACBOTHR	0.133326	0.690526
AFQT1_2	-0.016606	0.867368
DEPTANY	0.045038	0.707368
NONMAR	-0.024697	0.153684
NLBOP	-0.008214	0.128421
PFL303	0.198155	0.497635
RGI	-0.759883	0.194408
CRUM2534	0.000205	0.020531
PMAN	0.123597	0.968336

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.59

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 304 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.881953	1.831723	-0.481488
EDHSMOR	-0.551891	0.915494	-0.602834
RACBOTHR	1.549784	0.314511	4.927590*
AFQT1_2	0.382501	0.266799	1.433668
DEPTANY	0.153393	0.244778	0.626661
NONMAR	-0.531074	0.413694	-1.283736
NLBOP	-0.693657	0.587167	-1.181362
PFL304	2.227526	0.725072	3.072147*
RGI	-1.847302	8.510951	-0.217050
CRUM2534	0.259535	0.097327	2.666622*
PMAN	0.729253	0.598882	1.217691

NUMBER OF SUCCESSFUL PREDICTION	=	230(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	40.784141
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	287.765921
EFRON ADJUSTED R-SQUARE	=	0.256485
EFRON R-BAR SQUARE	=	0.229448
SQUARED CORRELATION COEFFICIENT	=	0.256687
VALUE OF LOG LIKELIHOOD	=	-125.456777
NUMBER OF OBSERVATIONS	=	286

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.298420	1.000000
EDHSMOR	-0.182169	0.975524
RACBOTHR	0.155850	0.297203
AFQT1_2	0.114038	0.881119
DEPTANY	0.037747	0.727273
NONMAR	-0.027645	0.153846
NLBOP	-0.004924	0.020979
PFL304	0.378382	0.502025
RGI	-0.123350	0.197342
CRUM2534	0.003997	0.045512
PMAN	0.240765	0.975738

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.60

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 306 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-5.339098	1.229510	-4.342461*
EDHSMOR	1.632194	0.503785	3.239863*
RACBOTHR	1.495112	0.208234	7.179945*
AFQT1_2	0.196488	0.206620	0.950961
DEPTANY	0.022600	0.164091	0.137728
NONMAR	-0.691583	0.260821	-2.651558*
NLBOP	-0.462348	0.316716	-1.459822
PFL306	2.665093	0.485407	5.490432*
RGI	-0.945293	5.169547	-0.182858
CRUM2534	0.058288	0.057921	1.006338
PMAN	2.511897	0.542234	4.632500*

NUMBER OF SUCCESSFUL PREDICTION	=	445(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	77.230172
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	749.498187
EFRON ADJUSTED R-SQUARE	=	0.416127
EFRON R-BAR SQUARE	=	0.405531
SQUARED CORRELATION COEFFICIENT	=	0.416878
VALUE OF LOG LIKELIHOOD	=	-244.899266
NUMBER OF OBSERVATIONS	=	562

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-3.534957	1.000000
EDHSMOR	1.065275	0.985765
RACBOTHR	0.228980	0.231317
AFQT1_2	0.114120	0.877224
DEPTANY	0.009345	0.624555
NONMAR	-0.090437	0.197509
NLBOP	-0.011438	0.037367
PFL306	0.835433	0.473459
RGI	-0.123665	0.197589
CRUM2534	0.004658	0.120689
PMAN	1.649724	0.991958

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.61

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 316 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.702014	1.556171	-0.451116
RACBOTHR	1.095722	0.278320	3.936911*
AFQT1_2	0.450280	0.279402	1.611582
DEPTANY	0.182901	0.183239	0.998154
NONMAR	-0.375695	0.353689	-1.062220
NLBOP	-0.554791	0.211340	-2.625116*
PFL316	2.302476	0.533336	4.317124*
RGI	-8.237335	6.535351	-1.260427
CRUM2534	0.046773	0.074639	0.626656
PMAN	1.011962	0.703978	1.437492

NUMBER OF SUCCESSFUL PREDICTION	=	193(71 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	52.650753
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	297.872274
EFRON ADJUSTED R-SQUARE	=	0.196602
EFRON R-BAR SQUARE	=	0.168898
SQUARED CORRELATION COEFFICIENT	=	0.197286
VALUE OF LOG LIKELIHOOD	=	-156.227205
NUMBER OF OBSERVATIONS	=	271

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.461889	1.000000
RACBOTHR	0.109070	0.151292
AFQT1_2	0.267837	0.904059
DEPTANY	0.082595	0.686347
NONMAR	-0.031012	0.125461
NLBOP	-0.066001	0.180812
PFL316	0.853318	0.563280
RGI	-1.257454	0.232014
CRUM2534	0.002693	0.087493
PMAN	0.651622	0.978678

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.62

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 321 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	3.440462	2.982318	1.153620
RACBOTHR	0.785507	0.450482	1.743703*
AFQT1_2	-0.847811	0.742972	-1.141107
DEPTANY	0.376413	0.355871	1.057722
NONMAR	-0.420392	0.729547	-0.576238
NLBOP	0.946652	0.460483	2.055780*
PFL321	5.126339	1.325238	3.868241*
RGI	-26.558899	15.300415	-1.735829*
CRUM2534	0.158346	0.155041	1.021314
PMAN	0.439939	0.842442	0.522219

NUMBER OF SUCCESSFUL PREDICTION	=	94(85 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	13.237893
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	103.136367
EFRON ADJUSTED R-SQUARE	=	0.333256
EFRON R-BAR SQUARE	=	0.273249
SQUARED CORRELATION COEFFICIENT	=	0.333374
VALUE OF LOG LIKELIHOOD	=	-42.668292
NUMBER OF OBSERVATIONS	=	110

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	1.041490	1.000000
RACBOTHR	0.067013	0.281818
AFQT1_2	-0.228650	0.890909
DEPTANY	0.074583	0.654545
NONMAR	-0.019667	0.154545
NLBOP	0.054709	0.190909
PFL321	0.767742	0.494732
RGI	-1.598968	0.198880
CRUM2534	0.004481	0.093473
PMAN	0.127823	0.959797

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.63

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 328 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.911417	1.466276	-0.621586
EDHSMOR	-0.504312	0.562974	-0.895800
RACBOTHR	1.243591	0.177509	7.005807*
AFQT1_2	0.111012	0.210640	0.527021
DEPTANY	0.059754	0.173246	0.344907
NONMAR	-0.990562	0.303124	-3.267839*
NLBOP	-0.266299	0.266612	-0.998824
PFL328	3.433267	0.557147	6.162224*
RGI	-18.277266	6.787420	-2.692815*
CRUM2534	0.075869	0.068320	1.110492
PMAN	3.657608	0.860291	4.251594*

NUMBER OF SUCCESSFUL PREDICTION	=	406(81 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	67.688564
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	561.430792
EFRON ADJUSTED R-SQUARE	=	0.327584
EFRON R-BAR SQUARE	=	0.313945
SQUARED CORRELATION COEFFICIENT	=	0.328064
VALUE OF LOG LIKELIHOOD	=	-214.083515
NUMBER OF OBSERVATIONS	=	504

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.382556	1.000000
EDHSMOR	-0.206639	0.976190
RACBOTHR	0.194708	0.373016
AFQT1_2	0.041418	0.888889
DEPTANY	0.016920	0.674603
NONMAR	-0.068471	0.164683
NLBOP	-0.007319	0.065476
PFL328	0.694768	0.482119
RGI	-1.503699	0.196007
CRUM2534	0.002327	0.073071
PMAN	1.505237	0.980459

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.64

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 431 X 1

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-1.284603	0.411268	-3.123520*
EDHSMOR	0.018981	0.063742	0.297786
RACBOTHR	0.585471	0.042231	13.863464*
AFQT1_2	0.054419	0.035477	1.533907
DEPTANY	0.167078	0.040638	4.111374*
NONMAR	-0.553428	0.071879	-7.699441*
NLBOP	-0.020073	0.056550	-0.354952
PFL431	2.722586	0.132600	20.532326*
RGI	-9.797610	1.242564	-7.884995*
CRUM2534	0.030560	0.015913	1.920507*
PMAN	2.316124	0.336674	6.879433*

NUMBER OF SUCCESSFUL PREDICTION	=	5948(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1167.708284
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	9961.897892
EFRON ADJUSTED R-SQUARE	=	0.214335
EFRON R-BAR SQUARE	=	0.213290
SQUARED CORRELATION COEFFICIENT	=	0.214352
VALUE OF LOG LIKELIHOOD	=	-3611.339624
NUMBER OF OBSERVATIONS	=	7528

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.570390	1.000000
EDHSMOR	0.007759	0.920563
RACBOTHR	0.073589	0.283077
AFQT1_2	0.008763	0.362646
DEPTANY	0.051254	0.690887
NONMAR	-0.033459	0.136158
NLBOP	-0.000849	0.095244
PFL431	0.719251	0.594971
RGI	-1.019323	0.234309
CRUM2534	0.000461	0.033947
PMAN	1.043294	1.014476

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY

Table 5.65

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 702 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.559237	0.470952	-5.434175*
EDHSMOR	0.086908	0.087148	0.997243
RACBOTHR	0.335409	0.047829	7.012668*
AFQT1_2	0.005237	0.054643	0.095845
DEPTANY	0.175266	0.054245	3.231016*
NONMAR	-0.198762	0.088846	-2.237158*
MALES	0.304485	0.098636	3.086964*
NLBOP	-0.179687	0.079784	-2.252157*
PFL702	2.135570	0.160654	13.292951*
RGI	-2.608623	1.352791	-1.928327*
CRUM2534	-0.008427	0.020702	-0.407082
PMAN	1.908813	0.426312	4.477499*

NUMBER OF SUCCESSFUL PREDICTION	=	3564(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	669.097556
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	4725.496151
EFRON ADJUSTED R-SQUARE	=	0.183768
EFRON R-BAR SQUARE	=	0.181740
SQUARED CORRELATION COEFFICIENT	=	0.183771
VALUE OF LOG LIKELIHOOD	=	-2105.467505
NUMBER OF OBSERVATIONS	=	4438

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1),
EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-1.026986	1.000000
EDHSMOR	0.032557	0.933529
RACBOTHR	0.053802	0.399730
AFQT1_2	0.000446	0.212032
DEPTANY	0.044849	0.637675
NONMAR	-0.012832	0.160883
MALES	0.116211	0.951104
NLBOP	-0.005427	0.075259
PFL702	0.610099	0.711923
RGI	-0.288582	0.275679
CRUM2534	0.000017	-0.004963
PMAN	0.766136	1.000204

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.66

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 811 X 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.963400	0.449819	-2.141750*
EDHSMOR	0.096507	0.109932	0.877883
RACBOTHR	0.573958	0.063547	9.032082*
AFQT1_2	0.078207	0.071281	1.097164
DEPTANY	0.140651	0.072833	1.931153*
NONMAR	-0.540840	0.127923	-4.227846*
NLBOP	-0.142279	0.111330	-1.277992
PFL811	1.561067	0.164149	9.510060*
RGI	-5.045479	1.608784	-3.136206*
CRUM2534	0.082524	0.028435	2.902223*
PMAN	1.541160	0.277640	5.550921*

NUMBER OF SUCCESSFUL PREDICTION	=	1775(78 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	381.256977
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	2298.544998
EFRON ADJUSTED R-SQUARE	=	0.166518
EFRON R-BAR SQUARE	=	0.162857
SQUARED CORRELATION COEFFICIENT	=	0.166553
VALUE OF LOG LIKELIHOOD	=	-1167.137533
NUMBER OF OBSERVATIONS	=	2288

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.427523	1.000000
EDHSMOR	0.039457	0.921329
RACBOTHR	0.113325	0.444930
AFQT1_2	0.008282	0.238636
DEPTANY	0.043238	0.692745
NONMAR	-0.031155	0.129808
NLBOP	-0.004581	0.072552
PFL811	0.576155	0.831697
RGI	-0.726896	0.324651
CRUM2534	0.000107	0.002912
PMAN	0.690016	1.008925

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY

Table 5.67

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 431 X 1

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-1.283255	0.411467	-3.118730*
EDHSMOR	0.018357	0.063772	0.287846
RACBOTHR	0.585760	0.042246	13.865604*
AFQT1_2	0.056183	0.035508	1.582285
DEPTANY	0.165545	0.040754	4.062042*
NONMAR	-0.557375	0.071958	-7.745845*
NLBOP	-0.017453	0.056614	-0.308291
NLFOLON	0.292409	0.206900	1.413285
NLJOINSP	-0.217799	0.259774	-0.838418
NLHUM	0.127703	0.181805	0.702418
PFL431	2.720119	0.132616	20.511262*
RGI	-9.806015	1.242933	-7.889413*
CRUM2534	0.030565	0.015918	1.920142*
PMAN	2.317076	0.336867	6.878308*

NUMBER OF SUCCESSFUL PREDICTION	=	5946(79 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	1167.195469
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	9986.995099
EFRON ADJUSTED R-SQUARE	=	0.214680
EFRON R-BAR SQUARE	=	0.213321
SQUARED CORRELATION COEFFICIENT	=	0.214697
VALUE OF LOG LIKELIHOOD	=	-3609.692055
NUMBER OF OBSERVATIONS	=	7528

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.569583	1.000000
EDHSMOR	0.007500	0.920563
RACBOTHR	0.073598	0.283077
AFQT1_2	0.009043	0.362646
DEPTANY	0.050765	0.690887
NONMAR	-0.033685	0.136158
NLBOP	-0.000738	0.095244
NLFOLON	0.001017	0.007837
NLJOINSP	-0.000347	0.003587
NLHUM	0.000512	0.009033
PFL431	0.718337	0.594971
RGI	-1.019824	0.234309
CRUM2534	0.000461	0.033947
PMAN	1.043341	1.014476

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY

Table 5.68

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 702 X 0

VARIABLE NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-2.526066	0.473094	-5.339453*
EDHSMOR	0.083959	0.087275	0.962001
RACBOTHR	0.335056	0.047838	7.003945*
AFQT1_2	0.006552	0.054658	0.119870
DEPTANY	0.172997	0.054630	3.166718*
NONMAR	-0.205392	0.089328	-2.299304*
MALES	0.284811	0.106834	2.665915*
NLBOP	-0.177207	0.079973	-2.215828*
NLFOLON	0.200018	0.174768	1.144473
NLJOINSP	-0.071150	0.162494	-0.437861
NLHUM	0.079139	0.251884	0.314188
PFL702	2.134164	0.160705	13.279992*
RGI	-2.610875	1.353048	-1.929624*
CRUM2534	-0.008210	0.020718	-0.396263
PMAN	1.898460	0.425150	4.465391*

NUMBER OF SUCCESSFUL PREDICTION	=	3564(80 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	668.757131
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	4718.319044
EFRON ADJUSTED R-SQUARE	=	0.184184
EFRON R-BAR SQUARE	=	0.181601
SQUARED CORRELATION COEFFICIENT	=	0.184186
VALUE OF LOG LIKELIHOOD	=	-2104.638552
NUMBER OF OBSERVATIONS	=	4438

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-1.013220	1.000000
EDHSMOR	0.031438	0.933529
RACBOTHR	0.053721	0.399730
AFQT1_2	0.000557	0.212032
DEPTANY	0.044248	0.637675
NONMAR	-0.013254	0.160883
MALES	0.108653	0.951104
NLBOP	-0.005349	0.075259
NLFOLON	0.001428	0.017801
NLJOINSP	-0.000559	0.019603
NLHUM	0.000279	0.008788
PFL702	0.609424	0.711923
RGI	-0.288701	0.275679
CRUM2534	0.000016	-0.004963
PMAN	0.761638	1.000204

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST

Table 5.69

PROBIT RESULTS FOR SECOND TERM AIRMEN: AFSC 811 X 0

VARIABLE** NAME	COEFFICIENT ESTIMATES	STANDARD ERRORS	COEF/SD STATISTICS
CONSTANT	-0.960898	0.449991	-2.135371*
EDHSMOR	0.097069	0.110040	0.882129
RACBOTHR	0.576109	0.063636	9.053186*
AFQT1_2	0.078414	0.071333	1.099263
DEPTANY	0.141009	0.073464	1.919418*
NONMAR	-0.540514	0.128066	-4.220593*
NLBOP	-0.139325	0.111520	-1.249337
NLFOLON	0.274358	0.245638	1.116921
NLJOINSP	-0.075017	0.290861	-0.257913
NLHUM	-0.096109	0.293906	-0.327007
PFL811	1.559249	0.164308	9.489803*
RGI	-5.032988	1.610845	-3.124440*
CRUM2534	0.082273	0.028460	2.890830*
PMAN	1.531814	0.277437	5.521301*

NUMBER OF SUCCESSFUL PREDICTION	=	1774(78 PERCENT)
SUM OF SQUARES OF RESIDUALS	=	381.105888
SSR WEIGHTED BY ESTIMATED PROBABILITIES	=	2296.726800
EFRON ADJUSTED R-SQUARE	=	0.166848
EFRON R-BAR SQUARE	=	0.162085
SQUARED CORRELATION COEFFICIENT	=	0.166879
VALUE OF LOG LIKELIHOOD	=	-1166.390269
NUMBER OF OBSERVATIONS	=	2888

MARGINAL EFFECTS OF REGRESSORS ON PROB(Y=1), EVALUATED AT THE SAMPLE MEANS

VARIABLE NAME	ELASTICITY	SAMPLE MEAN
CONSTANT	-0.426133	1.000000
EDHSMOR	0.039661	0.921329
RACBOTHR	0.113675	0.444930
AFQT1_2	0.008298	0.238636
DEPTANY	0.043320	0.692745
NONMAR	-0.031115	0.129808
NLBOP	-0.004483	0.072552
NLFOLON	0.002127	0.017483
NLJOINSP	-0.000364	0.010927
NLHUM	-0.000447	0.010490
PFL811	0.575106	0.831697
RGI	-0.724620	0.324651
CRUM2534	0.000106	0.002912
PMAN	0.685381	1.008925

*SIGNIFICANT AT THE 90 PERCENTILE, TWO-TAILED TEST
**MALES NOT INCLUDED TO ELIMINATE SINGULARITY

in all three cases, though not significant at the 90 percentile. The follow-on assignment is the only program which possibly simulates the conditional reenlistment of BOP in the first term. In most cases, an airman must have enough retainability to carry him through 3 to 5 years of a follow-on assignment, thus suggesting either reenlistment or extension. The direct relationship displayed by the probit results for a follow-on assignment is consistent with the relationship observed for BOP in the first term and in contrast to the results of BOP in the second term.

Additional Estimates

In the Appendix C, additional probit results are provided. Tables A5.1-A5.14 are identical to those presented above except that a dummy variable, REELI, which is one if the airman is eligible to reenlist and zero otherwise has been added. The addition of this variable, essentially, improves the goodness-of-fit measures while leaving the conclusion outlined above unchanged. Tables A5.15-A5.41 summarize the probit results when using a four-year window instead of a six-year window to construct the sample of first term airmen. In general, the results for the four-year window are not as strong as those for the six year window presented in this chapter; however, the "people programs" still are positive and significant in most cases. Finally, Tables A5.42-A5.111 contain alternative model specifications which, for the four and six-year windows, are only for comparison to the second term airmen estimates.

Conclusion

The empirical results of this study clearly indicate the impact of the Air Force's "people programs" on the retention behavior of first and second term airmen. In the main, the estimates of the impact on the probability of staying in the military of variables such as education level prior to military service, race, sex, marital status, number of dependents, relative military wage, the induction rate, and unemployment are consistent with previous econometric work in this area. Furthermore, these results have been obtained with a data set and using an econometric technique far superior to those of previous studies.

The most significant empirical advance, however, has been to discern the impact of the "people programs" on the probability of reenlisting. In particular, the results demonstrate that these programs do significantly increase the probability of first term airman staying in the Air Force, and that they do not have a significant impact on the reenlistment decision of second term airmen. Furthermore, the analysis suggest that the conditional reenlistment of the BOP for the first term decision is not the only factor supporting the positive relationship between reenlistment and "people programs". The impact of "people programs" on retention is different depending on whether the airman is a first termer or second termer. The Air Force may wish to consider "people programs" on a first term, second term basis. In addition, the conditional reenlistment of obtaining a

first term BOP is a strong enforcer of retention. Conditional reenlistment could be a useful tool in enhancing the retention impact of other "people programs", as implied by the results for the follow-on assignments versus join spouse or humanitarian assignments in the second term. The results obtained should assist the Air Force in determining future policy with respect to the use of the "people programs" as a retention instrument.

Bibliography

Amemiya, Takeski, "Qualitative Response Models: A Survey," Journal of Economic Literature, Vol. 19, No. 4, December 1981.

Ben-Porath, Y., "The Production of Human Capital and the Life Cycle of Earnings," Journal of Political Economy, 1967.

Ben-Porath, Y., "The Production of Human Capital Over Time," in Education, Income and Human Capital, ed. by Hansen, NBER, New York: Columbia University Press, 1970.

Blinder, A. S. and Weiss, Y., "Human Capital and Labor Supply: A Synthesis," Journal of Political Economy, 1976.

Bradford, D. F., "The Enlistment Decision Under Draft Uncertainty," Quarterly Journal of Economics, November 1968, 621-38.

Brechling, F. P. "A Time Series Analysis of Labor Turnover," CNA Professional Paper No. 170, December 1976.

Chow, W. K. and Polich, J. M., "Models of First-Term Reenlistment Decision," RAND R-2468-MRAL, September 1980.

Cook, A. A. and Rutherford, C. M., "A Computer Program and Model for Predicting the Supply of Air Force Volunteers," RAND R-910-PR, May 1972.

Cooper, V. L. (ed.), Defense Manpower Policy: Presentations from the 1976 RAND Conference on Defense Manpower, RAND R-2396-ARPA, December 1978.

DeVany, A. S. and Saving, T. R., "Life-Cycle Job Choice and the Demand and Supply of Entry Level Jobs: Some Evidence from the Air Force," Review of Economics and Statistics, forthcoming.

Ennis, J. H., "Reenlistment Bonuses and First-Term Retention," RAND R-1935-ARPA, September 1977.

Fisher, F. M. and Morton, A. S., "The Costs and Effectiveness of Reenlistment Incentives in the Navy," Operations Research, May-June 1967, 373-87.

Ghez, Gilbert R., and Becker, Gary, The Allocation of Time and Goods Over the Life Cycle, NBER, Princeton University Press, 1975.

Gilman, H., "The Economics of Military Pay," University of Rochester Working Paper, 1976.

Gotz, G. A. and McCall, J. J., "Estimation in Sequential Decision-making Models," Economic Letters, June 1980, 131-36.

Gotz, G. A. and McCall, J. J., "Estimating Military Personnel Retention Rates: Theory and Statistical Method," RAND R-2541-AF, June 1980.

Gotz, G. A. and McCall, J. J., "Sequential Analysis of the Stay/Leave Decision in a Hierarchical System," Management Science, forthcoming.

Haber, S. E., "Factors Influencing Attrition in the Marine Corps," Office of Naval Research T-306, March 1975.

Hazel, J. T., Stacy, W. J., and Burtch, L. D., "Assignment Location Preferences of Airmen," Air Force Human Resources Lab, AFHRL-TR 75-50, June 1975.

Heckman, J. J., "A Life-Cycle Model of Earnings, Learning and Consumption," Journal of Political Economy, 1976.

McCall, J. J. and Wallace N., "Training and Retention of Air Force Airmen: An Economic Analysis," RAND RM-5384-PR, August, 1967.

Methodology, Resources and Computation Directorate, "Cost Effectiveness Analysis of Bonuses and Reenlistment Policies," U.S. Army Concepts Analysis Agency CAA-SR-77-10, August, 1977.

Ross, S. G. and Warner, J. T., "Comparisons of Military and Veteran Compensation," CNA CRC 306, December 1976.

Ryder, H., Stafford, F., and Stephan, P., "Training and Leisure Over the Life Cycle," International Economic Review, 1976.

Saving, T. R., Battalio, R. C., DeVany, A. S., Dwyer, G. P., and Kagel, J. K., "Air Force Enlisted Personnel Retention-Accession Model," RRC AFHRL-TR-80-12, June 1980.

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